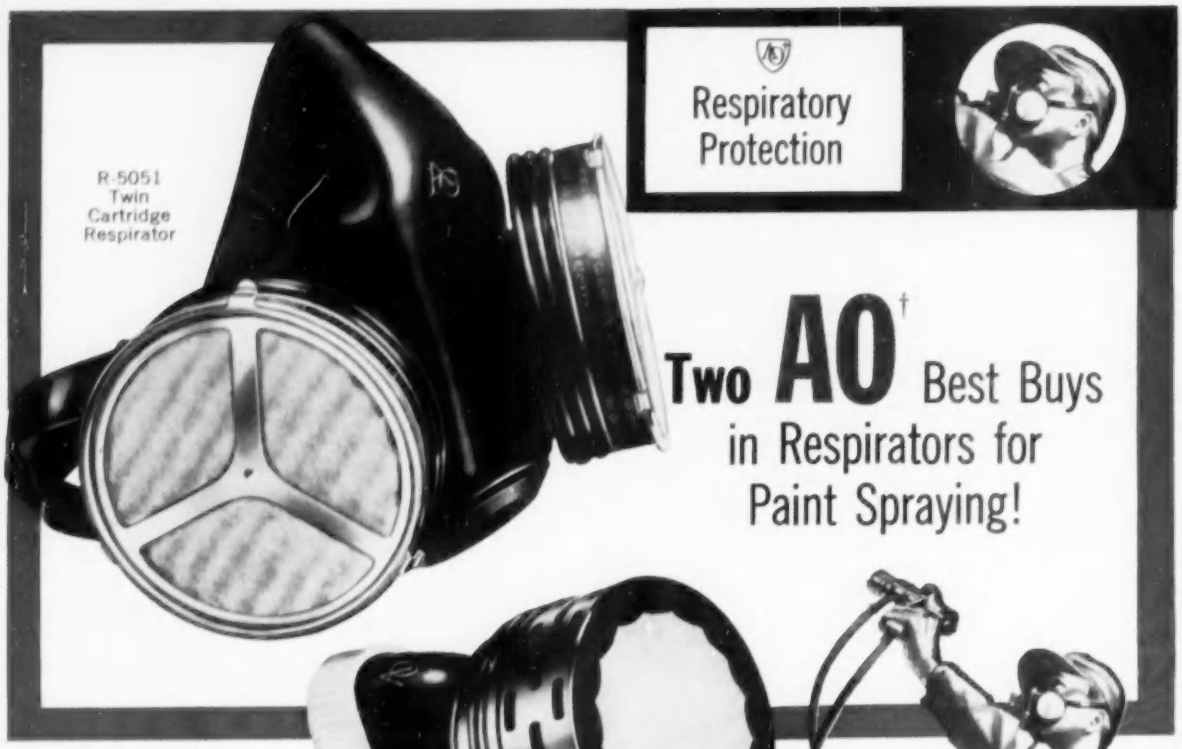
Safety Maintenance and Production

EST. 1901 • AMERICA'S PIONEER MAGAZINE IN ITS FIELD • FEBRUARY, 1956 • 50¢



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For complete security and the finest respiratory protection against paint sprays and vapors you need only the AO R-5051 Respirator *plus AO R-65 auxiliary filters* which prevent droplets of paint from plugging the chemical cartridges. R-65 filters are packaged 200 per box and two R-66 auxiliary filter clamps are provided with each box of auxiliary filters. The R-5051 is approved by the U. S. Bureau of Mines for use against organic vapors. (Approval No. BM-2304.)

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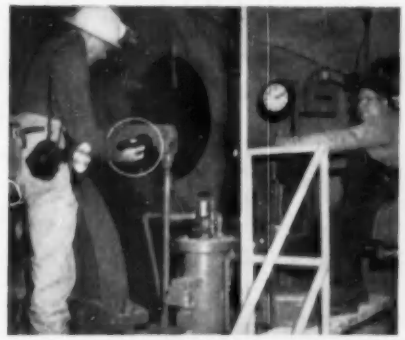
(For details, use Key # O-1 on card on page 71)



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Published by Alfred M. Best Company, Inc., Publication Office, Columbia Turnpike, Box 232, Rensselaer, N. Y. Editorial and General Offices, Best Building, 75 Fulton St., New York 38, N. Y. Entered as Second Class Matter at Post Office at Rensselaer, N. Y. Under Act of March 3, 1879. Subscription rates, $4.00 Per Year in the United States; $5.00 in Canada; Foreign, $6.00. Single Copies, 50 cents. Publication Date 1st.

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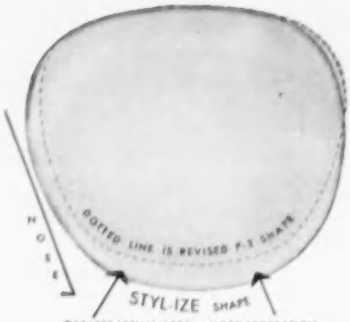

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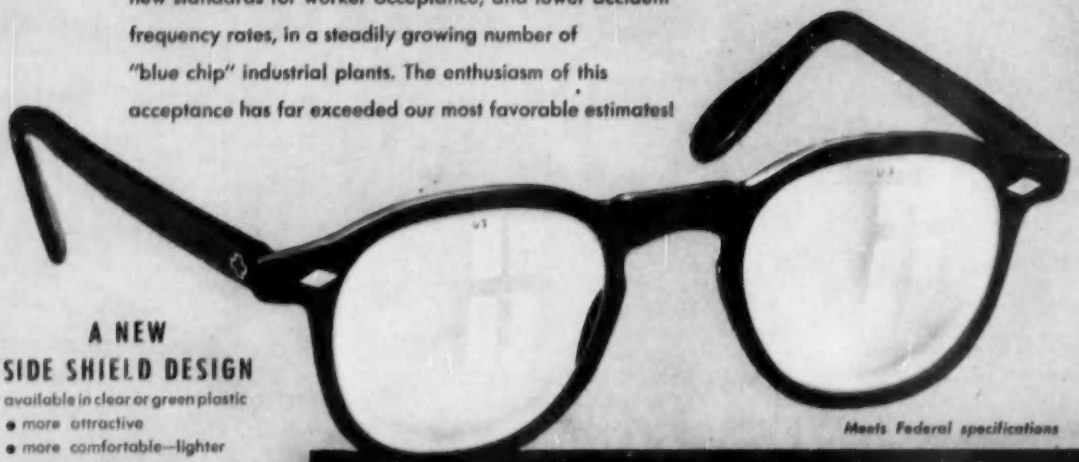

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Annual Subscription $4 (two years $6)
Canadian & foreign $5 (two years $8)
Single issues 50c. Also quantity rates

Safety Maintenance and Production

formerly "SAFETY ENGINEERING"

Volume 111, Number 2 **February, 1956**

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Cover picture by courtesy of Shell Oil Co.

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AMERICA'S PIONEER MAGAZINE IN ITS FIELD

SAFETY MAINTENANCE & PRODUCTION is indexed regularly by Engineering Index, Inc., New York

San Francisco, Calif. *February 2–3*

Sixth Annual California Statewide Meeting of the Governor's Industrial Safety Conference (Fairmont Hotel). Department of Industrial Relations, 965 Mission St. (Room 400), San Francisco, Calif.

Atlanta, Ga. *March 4–6*

Southern Safety Conference & Exposition (Biltmore Hotel). W. L. Groth, Executive Director, P. O. Box 8927, Richmond 25, Va.

Philadelphia, Pa. *March 7–8*

Twenty-Second Annual Philadelphia Regional Safety & Fire Conference and Exhibit (Broadwood Hotel). Walter B. Matthews, managing director, Philadelphia Safety Council, 121 S. Broad St., Philadelphia 7, Pa.

Boston, Mass. *March 19–20*

Thirty-Fifth Annual Massachusetts Safety Conference & Exhibit (Hotel Statler). Bruce Campbell, Manager, Massachusetts Safety Council, Inc., 31 State St., Boston 9, Mass.

Los Angeles, Calif. *March 19–21*

Third Annual Southern California Safety Congress & Exhibit (Ambassador Hotel). Greater Los Angeles Safety Council, 610 S. Main St., Los Angeles 14, Calif.

Klamath Falls, Ore. *April 5–7*

Forest Products Safety Conference. George Metzger, Secretary-Manager, c/o Willamette Valley Lumber Operators Association, Eugene, Ore.

Fort Wayne, Ind. *April 10–11*

Thirteenth Annual Northeastern Indiana Safety Conference & Exposition (Chamber of Commerce Building). Ivan A. Martin, manager, Safety Council, Ft. Wayne Chamber of Commerce, Ft. Wayne 2, Ind.

St. Louis, Mo. *April 10–12*

Central States Safety Conference & Exhibit (Hotel Chase). Reyburn Hoffman, Secretary-Manager, Safety Council of Greater St. Louis, 5 Locust St., St. Louis, Mo.

New York, N. Y. *April 16–20*

Twenty-sixth Annual Greater New York Safety Convention & Exposition (Hotel Statler). George E. Decker, chairman, Greater New York Safety Council, 60 E. 42nd St., New York 17, N. Y.

Cincinnati, Ohio *April 17–19*

Twenty-Sixth Annual All-Ohio Safety Congress & Exhibit (Netherlands Plaza Hotel). A. W. Moon, Congress Manager, Industrial Commission of Ohio, Columbus 15, Ohio.

Hartford, Conn. *June 5–6*

Eleventh Annual Conference of the Connecticut Safety Society (Hotel Statler). Stephen J. Pollock, Jr., Manager, c/o Remington Arms Co., Inc., 939 Barnum Ave., Bridgeport, Conn.

Detroit, Mich. *April 24–26*

Twenty-Sixth Annual Michigan Safety Conference & Exposition (Sheraton-Cadillac Hotel). Bayard A. Clark, Executive Secretary, Automobile Club of Michigan, Detroit 26, Mich.

Charlotte, N. C. *May 2–4*

Twenty-Sixth Annual North Carolina Statewide Industrial Safety Conference (Charlotte Hotel). H. S. Baucom, Director of Safety, North Carolina Industrial Commission, Raleigh, N. C.

Washington, D. C. *May 14–16*

President's Conference on Occupational Safety.

Rochester, N. Y. *May 22–24*

First Genesee Valley Safety Conference and Exhibit (Rochester Chamber of Commerce Building). William H. Keeler, secretary-treasurer, Rochester Safety Council, 55 St. Paul St., Rochester 4, N. Y.

York Harbor, Me. *September 13–14*

Twenty-Ninth Annual Maine State Safety Conference (Marshall House). Arthur F. Minchin, Secretary, Department of Labor & Industry, State House, Augusta, Me.

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Your Signature Here

NOTE:
Your Safety News is designed to promote better employer-employee relations. Every item is carefully weighed from this viewpoint.

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(pages 2 and 3)

IN YOUR EMPLOYEE'S INTEREST

Your employee's self interest in his own safety is always emphasized. Even household hazards are covered to keep him safety-conscious every minute, not only in the plant, but at home and on the way to work.

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THE "FOLKSY" APPROACH

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it's SAFE to say

• INCENTIVES TO SAFETY

PROGRESSIVE management throughout all industry is fully aware that accident costs represent a fertile territory to begin hacking away at cutting expenses. Within recent years both the direct and indirect costs of accidents have reached almost fantastic heights and just as the cost of living has soared, as has the cost of dying and injury through accident.

Settlements of accident claims as well as jury awards have felt the sting of inflation and many companies have had good reason to shudder at the thought of claims for personal injuries.

It is obvious that while prevention is the supreme antidote for mounting accident costs, not enough companies are exploring every approach to that antidote. In the words of an attorney for an eastern transit corporation, "You can't be sued for the accident you avoided."

Emphasis today is based on rewards for good safety-minded operators and their achievements toward the goal of accident reduction rather than inflicting penalties upon malefactors of safety. Naturally, stern disciplinary measures are needed to deal with violations of safety procedures but the road to full cooperation must be paved with incentives.

Every industrial accident incurs a cost that produces nothing tangible to management. It is a non-productive expense that must be reflected in the cost of the product or services. Ironically, it is a factor of industry's operating cost that lends itself to greater immediate control.

Too many companies view accidents solely in the light of medical expense without taking cognizance of the indirect costs of curtailed production, material or equipment damage, expense of training employee replacements, shattered morale and reduced wages of the victim. Not only is it management's moral and legal responsibility to prevent human suffering but it is pertinent to remind management that accident costs are rising due to:

Claims conscious attitudes of employees.
Increased number of claims going to hearings.
Greater use of legal representation by injured employees.
Tendency toward exaggerated claims.
Increase in medical and hospital expenses.
Higher wages and salaries with consequent increase in injured employee's "money value."
Liberalization of workmen's compensation benefits.

The success of any safety program depends upon the degree of active interest and cooperation aroused in the general staff. After installation of protective devices and safeguards, and the application of safety rules and procedures, we can find still another solution to accident problems by providing an incentive in the form of prizes and awards in long-term campaigns carefully planned and administered. The goal should be within the reach of the rank and file, basically fair to all and providing for a tangible award or prize to those exerting the greatest safety effort.

Not only will an incentive program produce immediate results in preventing costly accidents but usually it serves to spotlight those employees who are developing accident patterns. Thus we can take corrective measures immediately while detecting errors of mechanical and human failure and strive to eliminate the basic hazard.

One transit corporation in New York State inaugurated its incentive system back in 1949 with premiums costing about $20,000 annually as bonuses for safe operators. Within four years, their accident frequency in collision reports dropped 32 percent representing a savings many times the value of their annual incentive prizes.

Actors do their best work under the stimulus of applause. In industry too, the basic appeal to a man's pride of ownership, desire for recognition and joy of leadership—human emotions we all share—can be channelled into the area of greater safety for all.

The costs of a well-planned, directed safety incentive program is negligible compared with the costs of present-day accidents. No one yet has thought of a better way toward increased profits than through the medium of decreased costs. H.A.

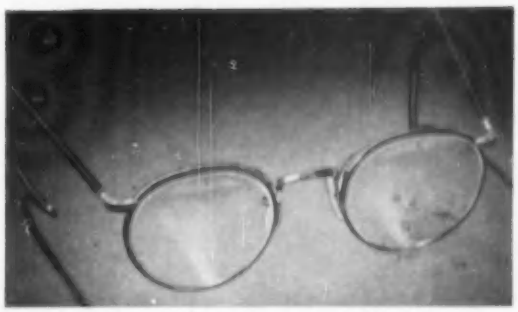
Industry's most complete line

of safety

frames

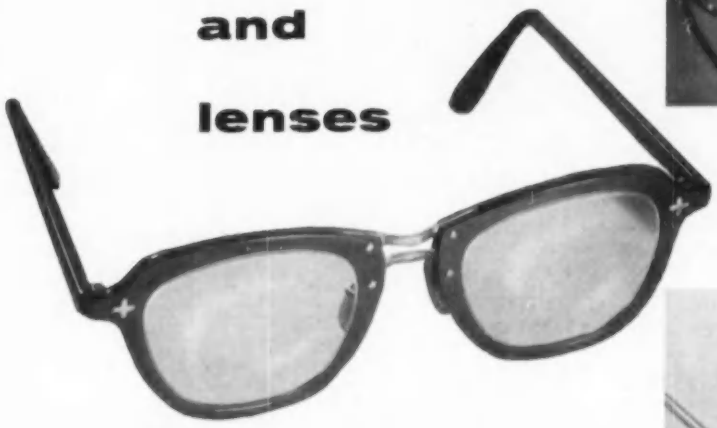
and

lenses



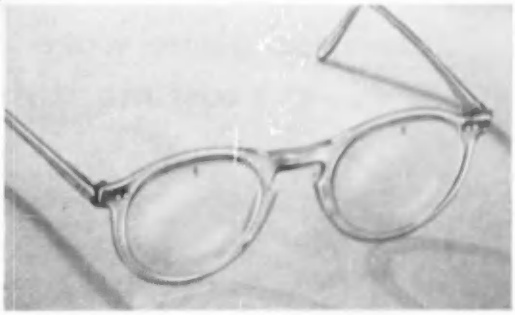
Popular all-metal type

Corrosion-resistant nickel alloy metal frame series, with P-3 "drop oval" lens shape. M-50 shown.



New Titan Metal-acetate combination

First combination frame in the industrial field. New S-7 lens shape for greater visual efficiency, increased protection, and better appearance.



Favorite in all-acetate

Non-sparking, combustion-resistant acetate frame series, with P-3 "drop oval" lens shape. Y-70 shown.

Whatever your need for spectacle-type safety eyewear . . . Bausch & Lomb has a model specially designed to give you the utmost in worker protection, efficiency and comfort. Write for "Complete Eye Protection," valuable data on safety lenses, frames, and their application:
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BAUSCH & LOMB
SINCE 1853

(For details, use Key # O-5 on card on page 71)

EDMONT CASE NO. 584: In a Massachusetts plant making hydraulic tractor attachments (name on request), leather palm gloves worn for handling and cutting steel bars and tubes on horizontal bandsaw became oil-soaked and unusable after 80 hours. Job test showed that Edmont's Snorkel (a light, very flexible oil-proof glove of plastic coated jersey) wore longer than 100 hours, saving over 25%.

Job-fitted glove wore 20% longer . . . cut cost more than 25%

Snorkel No. 404
knitwrist, fully coated

Grab-it No. 60W
Palm-coated knitwrist

Monkey-Grip No. 30
palm-coated knitwrist

Gloves, like tools, should fit the job. In the case history above, the manufacturer wanted a glove that provided a better grip, did not become oil-soaked, and would give substantially longer wear. An analysis of the operation indicated that the Edmont Snorkel was the glove best fitted for the job. In comparison testing the super flexible Snorkel gripped better, was impervious to oil, and wore more than 20 hours longer. Actually reduced glove costs more than 25%.

EDMONT CASE No. 486: Texas battery manufacturer found leather palm gloves lasted 1 to 2 hours, handling lead plates with rough, sharp edges through cutting and trimming machine. Edmont No. 60W gloves, palm-coated with cut-resistant natural rubber, wore 9 hours on the same job.

EDMONT CASE No. 521: In handling hardwood stock behind double ripsaw, leather palm gloves lasted 7 shifts. Edmont plastic palm coated No. 30 gloves lasted over 20 shifts.

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(For details, use Key # O-6 on card on page 71)

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(For details, use Key # O-7 on card on page 71)

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(For details, use Key # O-8 on card on page 71)

Autobiography of an accident

RE-ENACTMENT TEACHES RESCUE TECHNIQUES

Safety Department workers from The Higgins Company, New Orleans, offered an innovation in safety training at the recent Southern Safety Council meeting when they presented an exact reenactment of an accident which nearly claimed five lives. Instead of using verbal reports, the Higgins crew went through every step of the mishap in which five men had been overcome and were in danger of asphyxiation in the hold of a ship.

A mock-up of the hold was made. One bulkhead was omitted for viewing by the audience. The only entry into this compartment was through a 24 × 24-inch opening at the top.

Rescue work was possible only through this opening and the "victims" were raised through it and then carried to the front of the stage where first aid was administered. All five were revived by automatic artificial respiration before being carried off in stretchers bound for hospitals.

The reenactment, conceived by Leon Baker, Safety Director, followed the course of a near-fatal accident which had occurred earlier at the Higgins Company shipyards. The staged "rescue" was complete even to the "discovery" of the unconscious men by a passerby who summoned help.

This graphic re-enactment of an accident in a ship hold, which could have had serious results, is being used to demonstrate in a new way the most efficient rescue methods.

Mastic Knocked Over

In the actual case, five employees of the Clifford King Company were laying linoleum in the forward hold of the minesweeper "USS Fidelity." A five-gallon can of mastic was knocked over and went unnoticed. The adhesive mastic is composed of approximately 60 percent toluene. It quickly consumed the oxygen in the compartment and the men fell unconscious—suffocating.

A foreman passing the hold glanced through the small opening, saw the unconscious men, and called the Safety Department.

While city ambulances and emergency trucks were being summoned, Safety Director Baker and his assistant, Edward Gussman, donned oxygen breathing apparatus and went into the hold. The breathing equipment the rescuers wore was self-contained apparatus with a canister which absorbs exhaled carbon dioxide and generates oxygen as needed for the respiratory protection of the user in any concentration of toxic gases or oxygen deficiency.

The two rescuers tied ropes to the five stricken men, and other workers on deck hauled them out of the small space. Each of the victims was wrapped in a blanket, and automatic artificial respiration was applied. The men were revived by portable and completely self-contained instruments which automatically breathe for patients. The resuscitation equipment inflates the lungs and then permits exhalation by the natural recoil of chest and diaphragm. After natural breathing is established, the unit serves as an inhalator by supplying oxygen for the patient.

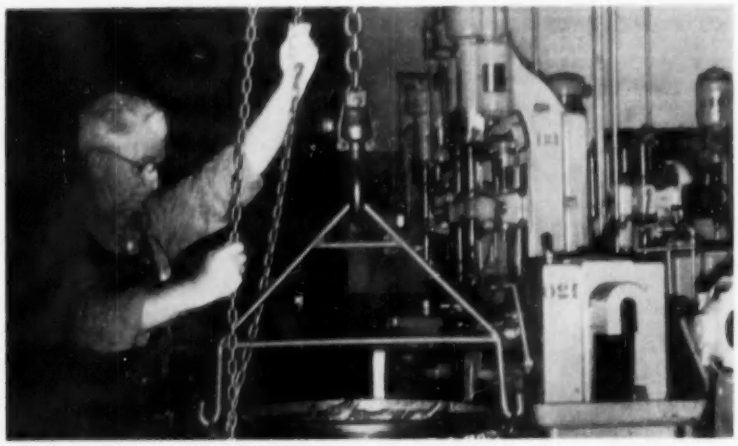
Fast Action Saved Lives

Due to the fast and effective first aid treatment, all five men had regained consciousness before being removed to hospitals. Doctors stated that only this fast action by the safety crews saved their lives. The five men, Floyd Meyers, Ed-

(Continued on page 16)

Materials Handling Series

THREE to Safe Materials Handling



Mechanical power, replacing muscle power, helps prevent back strains, cuts and other injuries associated with manual handling.

by **IRVIN L. REIS**
Lecturer in Industrial Engineering
University of Illinois

The vast quantity of material of all sorts which must be handled every year by our industries makes it imperative for every safety man and every industrial engineer to recognize the hazards involved and to be prepared to do something about them. All of the thousands of known manufacturing processes involve materials handling of some sort. It would be a wonderful thing if, by some magical means, we could eliminate **all** handling from even one of them. This cannot be done, of course, because both the machines and the materials involved have some dimension and mass. It is necessary to move either the machines or the materials at some point in every process which we can envision. In most cases, the items involved must be moved many times before the product is finished: pre-processing, processing, and distribution all require that materials handling take place.

Unfortunately, a large proportion of the effort of today's manufacturing companies is channeled into handling. Authorities differ on exact statistics, but it seems fairly certain that at least 35 percent, and some say as high as 65 percent, of all production costs are in reality costs of handling the materials. Similarly, it is estimated that nearly one-fourth of industry's manpower is used in materials movement of one sort or another. Actual processing often occupies as little as 50 percent of total production time, and almost no goods produced have a materials handling time less than 15 percent of total production time.

Materials Handling Ratio

While a single item or group of items is in process, it is handled not once, but many times. The amount of this re-handling is shown by a measurement called the "Materials Handling Ratio." This ratio is simply the relationship between the total weight handled and the weight finally shipped. Thus, if it is necessary to move a total of 50 tons of a material in the act of getting one ton of product, the Materials Handling Ratio is said to be 50. Now this does not mean, of course, that 49 tons of the material has disappeared during processing. What it does mean is that every bit of the material must be handled, on the average, some 50 times. These ratios very widely from product to product and plant to plant, but where an honest investigation has been made, values run from a minimum of about 10 to well over 100. This means that some plants find it necessary to do the equivalent of handling every bit of material over 100 times during the manufacturing period. Much of this effort is disguised as part of processing, and often is not recognized for what it is; but it exists, nevertheless.

With so much of this sort of thing occurring, it hardly seems surprising to find that accidents involving materials handling constitute from 25 to 30 percent of **all** industrial accidents. **At least one-fourth of industrial accidents are materials handling accidents!** These are of many varieties; manual handling and power equipment engender many kinds of mishaps. But all are involved with the ma-

STEPS

Essential to reduction of the industrial accidents involved in materials handling is a good training program. Posters assist.

Use of scale models for layout planning, such as the factory units which the men at right are studying, is an important part of materials handling analysis.

terials handling problem. Whether a worker becomes caught in a conveyor stream, is struck by the load-hook of a crane, or is involved in a truck collision, his accident is part of the overall materials handling problem.

Some Are Specialized

The exact kinds of accidents encountered depend upon the kinds of material and the kinds of handling. Some accident types are, of course, common to nearly all areas of worker activity. Others are more specialized. The bulldozers, trucks, bins, and belts used in moving and storing large quantities of bulk materials do not present difficulties identical to those of the chemical process industry's vats, piping, and vessels. The perils of atomic radiation from nuclear materials create problems not found in the ordinary manufacture of hard goods. The material itself, then, determines to a large extent not only the handling techniques required, but also the hazards encountered.

There are, however, other factors involved in the picture. The kind of plant layout, for example, is a determinant of the equipment to be used in many cases. The economics of alternative methods must always be considered, too. And how often the same old resistance arises: "Man and boy, I've done it this way for 30 years, and no so-and-so is gonna tell me now that . . ." or maybe, "Well, that's o.k. for those other guys, but I ain't ever had no trouble with . . ."

The big question is always, **"What can be done to eliminate handling accidents?"** There is, unfortunately, no single answer, no panacea. As seems to be so universally the case, the answer involves work and effort on the part of someone. Work and effort—lots of it. But there are a few basic things to which attention can be directed so as to help bring about good results. These are:

1. Better Work Systems
2. Mechanization
3. Training

Ideally, all three areas must be exploited fully if the best results are to be obtained. A full treatment of the mechanical factors without corresponding attention to the human factors, can rarely be expected to yield satisfactory results. On the other hand, training of employees without "engineering away" the physical hazards to as great an extent as possible, is not realistic, either. The answer lies in a blend of the areas mentioned —a blend which is different for each situation and each location.

Better Systems

In designing better work systems, we are really trying to eliminate as much of the Materials Handling Ratio as possible, as well as the time which a high ratio steals from our productive effort. As we lower this ratio, we are reducing the amount of handling required, and hence reducing accidents and costs. The general rules of work simplification and the principles of motion economy are important here, along with the philosophy of the questioning attitude. Question everything and utilize the tools of analysis such as process charts, flow diagrams, and activity charts. Those are powerful tools when used properly, and should be an integral part of the safety man's kit when he is considering questions of plant layout and materials handling. They are not difficult to learn and use, and when dealing with management and staff engineers, can be invaluable.

A study of plant layout for a knowledge of what constitutes good layout and safe layout is important,

"Junior" Plays His Part

When A. C. "Charlie" Woods, safety representative for Pacific Intermountain Express Co., goes travelling, his companion "Junior" is as easy-going as they come. He doesn't take up much room, doesn't snore or complain about hotel accommodations. No problem at all . . . for you see, Junior is made of wood. P-I-E's Safety Department employs Junior for use in combatting occupational injuries. It is planned to introduce Junior to all company personnel and, with Junior's help, Woods will demonstrate the right and the wrong way to lift anything from a typewriter to a trunk.
Back injuries accounted for approximately 26% of all company occupational injuries. Here Woods and Junior illustrate the wrong way to pick up a carton on the dock.

too. Space problems, danger points, and access considerations must all be taken into account when striving for the irreducible minimum of accidents. Of course, all safety men cannot and need not be industrial engineers. The safety man can, however, be proficient enough in these matters to discuss them intelligently and to get the safety viewpoint across. That is his responsibility.

Mechanization

It has often been said that every possible materials handling job should be mechanized. Certainly mechanization is very often a good thing. Reducing manual handling will help to reduce strains, cuts, and other common misfortunes. But here, again, there are limitations on mechanization as a universal procedure. The equipment must itself be safe, must be well suited to the job, and must be able to face up to measurement in dollars: Will it pay for itself? And of course, the operators must know how to use the equipment safely if mechanization is to reap a harvest of fewer accidents.

Training employees in materials handling phases of their jobs is another important area of concentration if accidents are to be reduced. Operator resistance to methods changes requires special training techniques for old employees as opposed to new ones who can be instructed properly as part of the orientation procedure. Naturally, periodic re-training and follow-up are required. It might be said that in this sort of thing, **follow-up prevents foul-up.**

Supervisors are not exempt from training, either. As the closest contact with the worker, they are vital to the success of any safety program, and especially to this work-a-day phase of it. Here, training programs need to include not only safe methods, but also general safety philosophy, worker-training, and even elements of supervision.

Ideally, the entire management and engineering staff should be safety-trained, too. How much easier really good safety results would come, if this were always the case!

Today's industrial plants are not doing the best possible materials handling job, and will not be until handling accidents are eliminated. The safety man cannot do the whole job alone, of course. Every industrial group needs to participate in the attempt to stamp out this source of high costs and human suffering.

A continuing increase in the productivity of this country's industry, accompanying a continuing increase in standards of living, is generally agreed upon as a desirable and necessary goal. Because of its dual economic and humanitarian implications, handling materials safely can make a real contribution toward achieving this end. Regardless of plant size, process type, or staff experience, well-directed effort in the three general areas of **better work systems, mechanization,** and **training,** can help each company share in the reduction of materials handling accidents and in the benefits which follow.

Based on a paper presented at the 7th Engineering Institute on Industrial Safety, September 21, 1955 in Urbana, Illinois.

Autobiography of an Accident

(from page 13)

win Heehloon, Joseph Bailey, Herman LaRoca and Ines Erickson, all agree.

At the Southern Safety Council Meeting, every step of the rescue was reenacted, and the actions were explained as the rescue progressed.

Extremely fast response by first aid crews in the original mishap was made possible, Mr. Baker explained, because of the company's safety squad system. Under this system there are eleven squads throughout the plant, all fully trained in safety measures. Each squad consists of five men and a supervisor so that trained safety men are on hand almost immediately in any emergency.

Pictures by courtesy of Mine Safety Appliances Co.

TIPS ON USING CUT-OFF MACHINES

Cutting off ferrous and nonferrous metals can be a costly problem or a big money-saver to industry, depending on the conditions of use and selection of wheels for the work.

Studies by Delta Power Tool Division, Rockwell Manufacturing Company, show that because of its relative newness on the industrial scene, the tool is sometimes misused.

Wheel Choice Important

Proper use or misuse of the cut-off machine often lies in the choice of wheels. For cutting hard materials a soft grade of wheel is used; hard materials tend to dull the grit more rapidly, while a softer bond tears the grit away to expose sharp grit to the work.

The shape of the part to be cut also influences wheel choice. For example, a softer wheel should be used to cut solid stock than is necessary on tubular stock. Tubing presents a small contact area to the wheel and thus higher unit pressure which tends to break down the bond more rapidly.

How to Cut with Abrasive Wheels

In cutting ferrous metal, best results are achieved by feeding the wheel into the work as fast as possible. Feeding pressure should be applied steadily after the wheel is in contact with the work, but not to the extent that the wheel is slowed considerably. The faster the wheel is fed through the work the greater the wheel life obtained.

Burrs on the work are often a problem in metal-cutting with abrasive wheels. In cutting hard materials burrs present no great problem, and any that do occur are so hard and brittle they are easily removed.

Answer to Problems

When cutting soft materials, an abrasive wheel has a greater tendency to create a burr which is sometimes difficult to remove due to the ductility of the stock. This problem can be reduced and in some cases eliminated by using a softer grade of wheel, though possibly at the sacrifice of some wheel life. When cutting high carbon steel which subsequently is to be machined, occasionally work-hardening of the surface occurs. Wet cutting is often the answer.

Cutting Nonferrous Metals

While copper, brass, aluminum and other nonferrous metals can be cut with abrasive wheels, tests indicate it is often more advantageous to use a high-speed metal-cutting steel saw blade in the cut-off machine. Made of high-speed steel or of special high carbon, high chrome alloy of low filing temper, the blade is hollow ground for good clearance. As the machine is only as good as the blade, it should be properly treated and kept sharp at all times.

The saw blade, running at 2000 rpm, cuts nonferrous metals faster than an abrasive wheel and practically eliminates the burr which plagues the cutting of soft materials. Though initial cost of a high-speed blade is greater than an abrasive wheel, service life of the former is much longer.

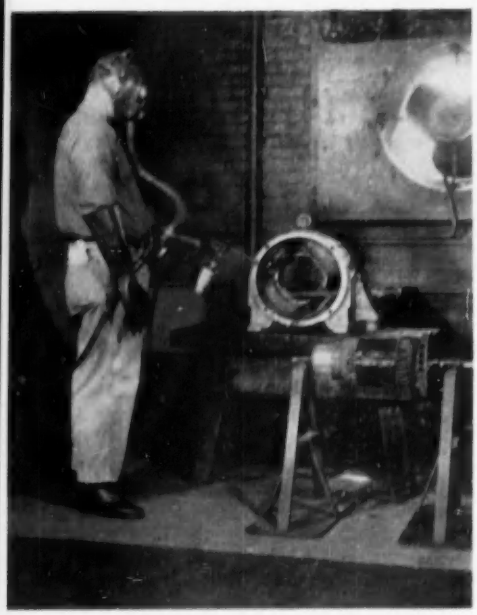
In cutting round material, both the saw blade and abrasive wheel have a natural tendency to rotate the work. This movement can cause spoilage or crowd and thus damage the blade or wheel. For these operations, a simple clamp mechanism is recommended for holding down the work. This work device is especially valuable in making angular cuts as the operator is protected from rotating or sliding work.

Pictures by courtesy of Rockwell Mfg. Co.

This man, to obtain a longer life for his cut-off machine, selects wheel suitable to material and makes a steady but rapid cut.

Protective Clothing Series

Selecting Protective



This man is cleaning an electric motor with solvent. Like the men shown on the next page, he is properly equipped.

There's nothing new in body protection, per se. It has been used for thousands of years, starting with the cave man, if we can believe the artists' conceptions of these individuals, who draped the skins of animals about their torsos to ward off the elements. We can easily imagine that one of the stone-headed-spear throwing gentry discovered that the toughened hide he was wearing provided some degree of protection against sharp objects, either accidentally encountered or intentionally tossed in his direction. That event was probably the start of the race that is still going on, the race between armor and armament.

Through the centuries man has been spending literally millions of dollars for guarding his vital organs and almost always for protection in combat with a determined enemy. But an even more implacable enemy has crossed swords with many people engaged in peaceful pursuits today. It never quits, it takes advantage of every laxity and "never gives a sucker a break." It has been harassing the human race since man first tried to make and build things. It has yet to be completely conquered, although in recent years our defensive controls have become more and more effective. Some people call it "Fate", some people call it "Bad Luck" but we know it as Industrially Incurred Injuries.

As is well known, protective equipment of whatever type does not **stop** accidents. It can and does either **prevent entirely,** or **minimize greatly,** the injury that would have resulted from the accident. To that extent, protection or armor is somewhat ahead in the race with the objects that are striking us.

Head Protection

The successful use of helmets by armed forces through the ages finds a very similar application in the popular hard hat used in industry today. There are many instances where hard hats have warded off or stopped falling objects that surely would have resulted in fatalities had this protection not been worn; so many in fact that the hard hat should stand high on any list of effective protective devices. It is comfortable, a variety of winter liners are available, and, from personal experience, one gets accustomed to wearing a hard hat very quickly. Combination hard hats and welders' helmets are available to provide protection to the welder from possible falling objects. This is a splendid development because; while a welder is engaged in his work, with his helmet in place, he is concentrating on just one thing—laying a good solid bead of metal—and consequently cannot be expected to be as alert to possible hazards as another man who does not have his attention and his vision so restricted.

Another special application of the hard hat is the type that is built for protection against possible contact with exposed electrical conductors. In this instance, while impact protection is provided, the major objective is guarding against electrical shock. This type of special hard hat is being used increasingly by public utilities for their line crews.

It is interesting to note that an adaptation of the principle of the hard hat has found its way into baseball caps to afford some measure of protection for the batter from the "bean ball," and lacrosse players have worn protective caps for years. Take a look at the modern football helmet. It is a specialized hard hat. These examples are cited to show that many other people are recognizing a definite hazard and consider it smart business to protect themselves accordingly. To those people who are reluctant, for any one of several reasons, to wear effective protective equipment, perhaps the example of literally thousands of

Clothing

by **CARTER KENDALL**
Safety Engineer
Bethlehem Steel Company
Bethlehem, Pa.

Workers in steel require the utmost in protection. Among garment materials used to guard them against various types of molten matter are asbestos, leather, wool.

top-flight athletes will be convincing.

Garments of many types are available for protection against the variety of molten matter used in modern industry. They are made of 2½ pound asbestos, aluminized light weight asbestos, 32 ounce virgin and reprocessed wool, 20 ounce wool and a variety of cotton fabrics treated in many ways to make them fire resistant. The selection of the material is guided by the temperature of the molten matter that can spill or splash, the mass of the possible splashing matter and the frequency of occurrence of splashes. Working with molten glass or steel requires the utmost in protection, while the sparks from spot welding and burning and the splash of solder can be protected against by relatively lighter fabrics.

Scarfer's hood was made by covering a welder's helmet with abestos and inserting a lighter shade protective lens.

Body protection for arcwelders on production work requiring high amperage, usually consists of chrome tanned leather, cape sleeves or full jackets and chaps, aprons or trousers, depending upon the type of work being done. Mobility of the welder should not be overlooked, neither should his proximity to other production welders.

Protection of the body against sharp objects is provided by substantially built aprons of heavy canvas or leather. Some leather aprons are further strengthened by steel staples set close together. Kick-back aprons of various types are available, reinforced by heavy fibre or composed of metal mesh. Aprons are available in a variety of lengths for protection of the lower abdomen, the bib type for the upper body as well as the abdomen, and the split-leg type for the crotch and upper legs.

The lower legs can be protected by leggings of any one of several types, or shin guards, depending upon the exposure. Heavy duck or leather, reinforced with steel strips are available with or without a flare at the instep to afford some protection to the metatarsal arch.

Virtually all of the general types of protective equipment so far described are available in rubber, synthetic rubber, or plastics or plastic-coated fabrics to protect against paints and the splash of chemical solutions of various types. Highly specialized protective equipment is also obtainable for protection against x-ray and radioactive isotopes.

Wide Variety Available

For protecting hands and forearms there is a veritable multitude of gloves and wristlets available of almost every type of material: canvas, leather, asbestos, plastic and plastic coated, steel studded or plain, double layers, lined and unlined. There are types suitable for every conceivable job.

In summation it may be said that in the entire body protection field, the need for specialized protection has been recognized and the equipment is available. The exposure must be identified and the hazard defined or else time will be wasted in getting the proper protective equipment on the men who are exposed.

From an address presented at the 25th Annual Greater New York Safety Convention. Pictures by courtesy of Bethlehem Steel Co.

Accidents Get

Oil-field safety can be a substantial problem for any company, but for a firm operating with eighty different locations from the Rockies to the mouth of the Mississippi, it can present a prime headache.

Mud Products, Inc. of Tulsa, Oklahoma is such a firm. But, despite the difficulties, it has developed a visual safety education program which reduced time lost through injuries to a minimum and saved the company $15,000 a year in insurance premiums.

It was not always easy, though, according to Chet Benefiel, safety director and transportation superintendent. At one time in the firm's history, it even faced cancellation of insurance because of excessive claims.

Mud Products Inc. and its subsidiaries—Beaumont Cement Sales Co. and Bomud Co.—were the first specialized distributors of Baroid drilling muds and chemicals, and this specialization brought rapid growth to the business.

"Mud distribution had been a sideline of supply stores and lumber companies," President E. R. Albert Jr. recalls, "when we organized our business in 1946."

The company "grew like Topsy," Benefiel says. Its trucks and other equipment wore out rapidly before a suitable replacement schedule could be worked out. As a result, the company suddenly found itself having an inordinate number of accidents and one insurance company canceled its coverage of Mud Products as a poor risk.

It was at that point, some four years ago, that the company began giving serious study to ways of cutting accidents. Better maintenance of equipment was a part of the problem, and Benefiel joined the firm at that time as transportation superintendent to take care of the organization's 150 automobiles and trucks, as well as the tugs, barges and seaplanes which are required to service its Louisiana customers.

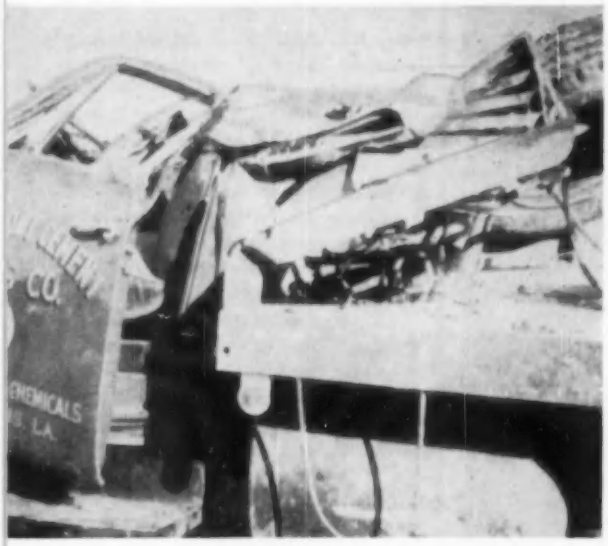
But improved maintenance was not enough to put the company on a firm safety basis. Neither could safety rules or devices, as such, do the job unless personnel were thoroughly sold on the program. Education was the only answer, for the field staff was spread in small groups throughout the area in some 80 warehouses, making supervision and enforcement of safety principles virtually impossible except on a thoroughly educated, voluntary basis.

"From experience we knew," Benefiel points out, "that you could talk your head off about safety and it wouldn't do any good unless you dramatized it properly."

Yet the job had to be done, not only as a matter of economy for the company and safety for its employees, but also as a vital protection to the drilling contractors and oil companies on whose property the employees spent much of their time delivering muds. In unloading sacks of mud from the trucks to the driller's mudhouse or stockpile there are many opportunities for mishaps if the job is handled carelessly. Safety here was as much a matter of customer service as of humane and economical operation.

Utmost care at all points is taken to reduce accident toll. Correct loading is given special attention because it is basic to entire safety set-up.

'Mud' Treatment



A wrecked car, result of too great speed rounding curves with heavy load, points up its warning in unmistakable terms.

The best method of safety education would be the use of motion-picture films for employees, Benefiel felt, but the dispersion of personnel over an area of thousands of miles—and in very small groups at any one location—presented problems.

Still, the job was important enough to justify anything that was necessary. Soon Benefiel was traveling thousands of miles putting on movie showings for employees throughout the area. As the responsible company official and one thoroughly familiar with the problems, he feels he must personally conduct these showings, with a minimum of commentary but with plenty of opportunity to answer all questions which may arise.

To make the program workable without too much cumbersome paraphernalia, Mud Products utilized a portable projector and a portable screen which are easily set up for use under any conditions. The equipment, in addition to being readily portable, is a top-quality projector which needs neither lubrication nor frequent servicing which might upset a schedule.

Ease of handling equipment assumed great importance, too, because of the facilities—or lack of facilities—for setting up in many of the locations. Most are rather small buildings where it is difficult to arrange anything like a "theater" setting. The portable projector and screen can be put to work quickly in any space where Benefiel can get semi-darkness and room for the employees to sit or stand as they watch. In five minutes he is ready to go, and just as quickly can be on his way to the next stop, which may be many miles away. A more complicated setup would not be at all feasible where showings are for very small groups—sometimes even for a single employee.

"If we have one person to watch the film," Benefiel says, "we think it's worthwhile. Educating even that one employee could prevent an accident."

In the matter of obtaining films for these showings, he finds no difficulty. There are plenty of good safety materials to fill his program. He endeavors to have a different film every time he makes his rounds of the territory—which is about every two months. In all, he shows about ten or twelve films in a year, since he sometimes uses two short ones together.

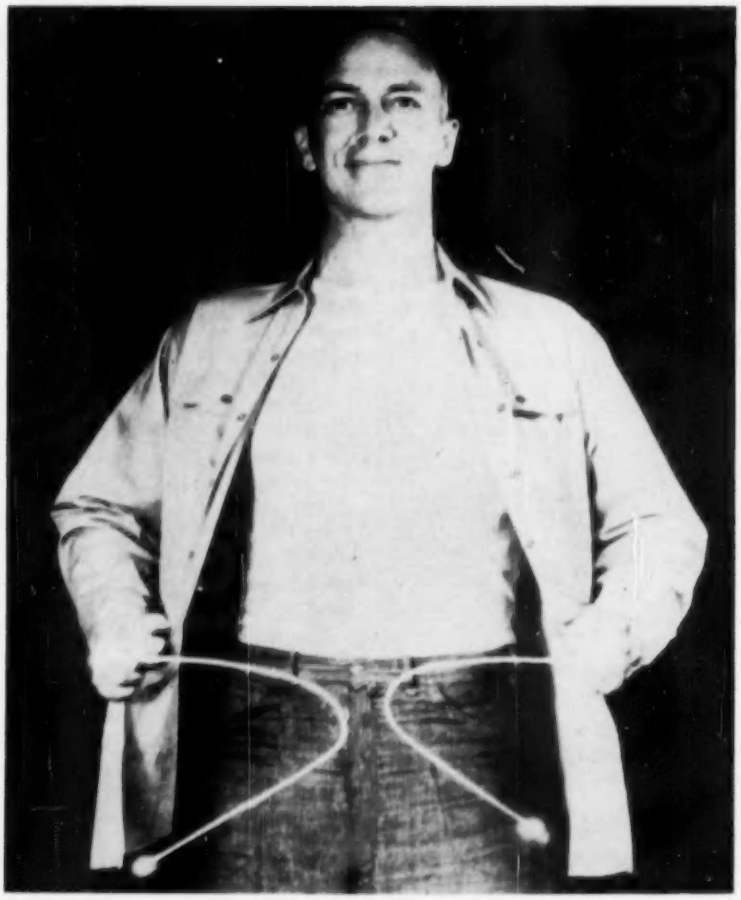
The preferred length for safety films is about 20 minutes, he found, and he borrows them from insurance companies, safety councils, police departments, manufacturers of industrial equipment and any other sources which come to his

(Continued column 3, next page)

In its effort to further insure greatest results from its anti-accident program, the company makes frequent use of films.

Safety Maintenance SALUTES

A SAFETY IDEA



Quick Release Shirts

New "quick-opening" work shirts now are being made by several manufacturers of work clothing. Workmen who have tried them out under various industrial conditions report that they have the safety advantage of letting the wearer discard them almost instantly if they get entangled or snagged on moving machinery, or equipment, or if they catch fire.

The shirts are fastened with gripper-type snap fasteners, instead of having buttons and buttonholes. A strong pull on either side of the shirt front causes the snap fasteners to open at once, without the delay that would be required to unbutton the garment.

Picture by courtesy of Scovill Mfg. Co.

'Mud' Treatment
(from page 21)

attention. They are available on loan, usually without charge.

He believes he has used films to great advantage, and the company's accident record, reduced to a fraction of its former rate, proves his point.

"They look forward to my coming," he says, "because we always show them an interesting film.

"Because of working conditions in the mud business, safety is particularly vital. If a driller has a blowout or lost circulation and needs extra mud in a hurry, we get a call and have to deliver promptly at all hours. Many times this means long, irregular hours for our drivers and warehousemen. Long hours mean excessive fatigue at times, and fatigue can lead to accidents if the men are not thoroughly safety-conscious."

As a result of the active safety program, plus the very tangible results in accident reduction, the company has had its annual insurance premiums reduced by $15,000, as a preferred risk.

But, more important perhaps, employee morale has been improved, much lost time has been eliminated, efficiency of operation has risen—and customer service, a basic ingredient of the mud business, is on a higher plane.

In short, despite most adverse conditions, visual education intelligently applied has turned a hazard-ridden operation into one of the safest in the oil fields.

Pictures by courtesy of Eastman Kodak Co.

Safety School

The eleventh annual North Carolina Safety School will be held March 26, 27, and 28 in Winston-Salem. Representatives from transportation, manufacturing, and utilities industries will meet to discuss problems of mutual interest.

The annual school is conducted cooperatively by the North Carolina State College Extension Division, the Department of Industrial Engineering and the Department of Psychology. It is sponsored by the N. C. Motor Carriers Assn., the N. C. Society of Safety Engineers, and the advisory board for conservation of manpower in North Carolina Industry.

Clothing That Can't Catch Fire . . .

There is especially good news for safety engineers, welders, and workers in steel mills, petroleum refineries, or chemical plants: many paint and lacquer manufacturers and others concerned with the use of flammable solvents, oils, hazardous chemicals or high temperature processes have recognized that the flameproofing (or strictly, the flame-retarding) of workers' clothes is a part of the every-day precautions against accidents, injuries and fire.

The menace of flammable clothing lies at the heart of the problem of serious human burns. It is the rapid burning of clothes which leads to extensive burning of the body. Often two or three seconds contact with flames is sufficient to ignite clothing and the flames travel rapidly over a large part of the garment.

"Flameproofing" is the treatment of ordinarily flammable materials in such a way as to render them incapable of supporting combustion. Furthermore the tendency for the flames to spread will be suppressed. Of the many important applications which flameproofing treatments find in the field of textile fabrics, certainly one of the principal uses lies in the processing of garment fabrics. In the past, however, commercial flameproofing has been limited for the most part to decorative fabrics for both indoor and outdoor use. More serious consideration should be given to the flameproofing of industrial clothing.

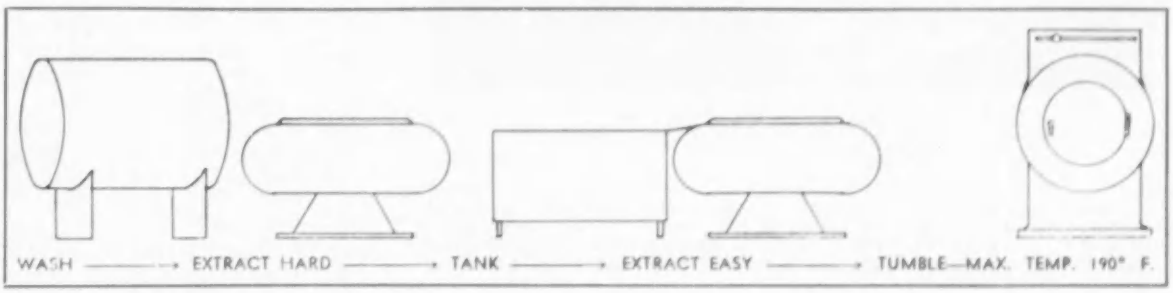
The main objective to be achieved by making workers' clothing more fire-resistant is to prevent ignition and free combustion of the garments when they come in contact with an outside heat source. The flameproofing treatment must provide maximum resistance to ignition, free-flaming and afterglow.

The second requirement of a fire-retarding treatment is that it must not decrease the comfort and protection which a garment made of untreated fabric affords the wearer. Thus if a flameproofing results in a stiff, boardy "feel" to the garment or imposes an additional heat load or is otherwise uncomfortable, a worker will wear it as little as possible, even though he knows that he is surrendering protection from a serious danger.

The third requirement is that the physical properties of the garment fabric should not be impaired by the treatment. There should be no reduction of the tensile strength of the fabric. The treatment should not detract from the appearance of the fabric, and the color and feel should not be changed. And, most important, the flameproofing treatment should also be non-toxic to the wearer under all conditions of use.

Extensive tests performed on numerous different fire-retardants afford a fairly comprehensive comparison of the relative performances of flameproofing compounds. Numerous factors enter into the choice of chemical to be used for flameproofing fabrics. While flameproofing efficiency is the primary consideration, it is only through careful attention to these secondary factors that optimal results may be obtained.

For example, one well-known chemical company which specializes in the field of chemical fire prevention has developed a special fire retardant for flameproofing industrial clothing. This product has



passed all tests regarding tensile strength, aging, color change, flexibility, non-toxicity in addition to tests on fire resistance. This fire retardant meets the requirements of the National Fire Protection Association and AST-MD 626-41T, it is approved by State Fire Marshals, local Fire Departments, National Institute of Cleaning and Dyeing and similar testing groups. This fire retardant* is shipped as dry concentrated compound and the flameproofing solution is prepared by dissolving the compound in water. Garments are treated by immersion. The chemicals combine with the textile fiber, do not clog the pores and thus allow the material to breathe.

Technical Factors

In order to produce adequate flame resistance for any particular fabric, it is necessary to determine the optimum amount of fire retardant needed. No general formula can be used in specifying this amount since wide variations exist in the flammable properties of fabrics. The flammability of a fabric is regulated by the nature of the fiber, weight of the cloth, porosity and type of weave and absorbency. Generally, higher percentages of fire retardant chemical will be needed for light porous fabrics than for heavy, closely woven materials.

A suitable method for flameproofing of garments by immersion is to saturate in a standard tank, to extract excess solution and to dry in a tumbler drier operated at a temperature not above 170 degrees F. for compliance with the manufacturer's specification for this special cloth.

* A source for further information about this particular fire-retardant may be obtained on inquiry to the Editor.

Conference on Design Engineering

A conference to study industry's problems in design engineering has been announced by the machine design division of the American Society of Mechanical Engineers, sponsor of the event. It will be held at Convention Hall, Philadelphia, May 14–17, concurrently with the First Design Engineering Show, produced by Clapp & Poliak, Inc., New York exposition management firm.

"There is an urgent need for a national conference to consider current problems in design engineering, including the human relations of design engineering," said Robert M. Conklin, chief, mechanical engineering division, Battelle Memorial Institute, Columbus, O., and chairman of the A.S.M.E. machine design division.

"Each new development in automatic, high speed production equipment presents scores of design problems. As design engineering improves, the public is benefited by new products, better products and less expensive products. We hope to stimulate industrial thinking and planning for better design engineering by this national conference on the subject," Mr. Conklin said.

According to tentative plans, the first day's program will be devoted to a discussion of "Cost Reduction in Product Design." The second day's session will be a panel consideration of means of finding suitable men and methods of training for the design engineering field.

On the third day, two papers will be presented. The first will deal with problems relating to the selection of engineering materials and will consider how factors such as mechanical efficiency and economy influence the choice of the materials. The other paper will describe methods for effecting miniaturization and new problems, in both design and manufacturing, which are created by miniaturization.

The subject of inventions and patents will occupy the last day. One paper will discuss methods of awarding recognition and compensation to company employees for inventions developed by such employees. The other will be a legal explanation by an outstanding patent attorney of the rights of an employee in his inventions.

On the floor of the show, about 150 companies will exhibit components and materials which go into the making of end products. The top engineers of these suppliers of original equipment and materials will be in attendance at the booths to answer questions of visitors.

Advance registration cards for the show may be obtained from Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y. Information concerning the conference may be obtained either from the A.S.M.E. or Clapp & Poliak.

Children Agree Safety Pays

A unique safety idea was put into effect recently by the Sherman Hotel, Chicago. Maurice Martel, the hotel's Director of Safety (center), called a meeting of employees' children to discuss safety at home and on the job. Here the youthful panel holds a meeting with the slogan "Work Safely Dad, We're Counting on you." The event was a huge success, and parents and hotel officials agreed that the children managed to get across the idea of "Safety Pays."

we had a safety-maintenance contest . . . and it worked!

by **CALVIN R. DE PEW**
Manager of Operations
American Safety Razor Corporation

When the American Safety Razor Corporation moved its entire factory operation several months ago from Brooklyn, N. Y., to Staunton, Va., one of the first problems that faced us was how to familiarize our new employees with sound plant procedure.

Safety, in particular, was a matter we felt urgently had to be stressed.

To meet the problem, we organized a Safety Good Housekeeping contest, designed to make our employees, both in production and in clerical, safety conscious. The contest continued over a three-month period, long enough to establish basic operating procedures.

Results Notable

The results we achieved, in terms of what we expected, were phenomenal:

1. The Safety Committee revealed that the plant was 90 percent cleaner than it had been at the beginning of the contest.
2. Accidents had been cut down by 50 percent.
3. Due to the democratic way in which the contest was run, the employees and top management were brought much closer together.

This is the way we ran our contest:

Announcement was made in the weekly bulletin around the first part of June that a Safety Good Housekeeping contest was to begin with prizes totalling more than $1,000. The prizes were the incentive that guaranteed the success of the contest.

Contest Technique

The plant, including offices, was divided into six sections, each one being judged in accordance with a point system, and the three scoring factors being as follows:

a) Cleanliness of aisles.

b) Proper piling and storage of materials and equipment.

c) Cleanliness of machines or equipment and work areas.

The weekly inspections were made by the Safety Committee consisting of the Manager of Operations, various Division Heads and the Safety Manager. There was no set time or day in which the inspections were made.

Prizes Awarded

Prizes were to be awarded to the first three sections in the following manner. All employees in the top three sections were entitled to participate in a drawing for television sets, portable radios, lighters, cosmetics, rotisseries, and other valuable items.

In addition, all employees in the three top sections received a mechanical pencil showing the Green Cross of Safety and the section standing in the contest.

Theme of the contest was "A clean place is a safe place." Immediately, results were good. The safety committee reported after the second week of the contest:

"This Safety Good Housekeeping Contest has resulted in considerable general improvement throughout the plant and office units. We feel there is room for still more improvement in every section—in those which have piled up points after the first week as well as those which have no score."

Scoreboard Spurs Interest

Enthusiasm increased as the contest proceeded. This was accomplished by keeping a scoreboard of the weekly progress on the bulletin board. The spirit of the contest was mirrored best perhaps by the announcement of the winners in the September ASR house organ. It read:

"A quick flick of the broom with two out in the last inspection drove in nine points for Section Two and brought it victory in the Safety Good Housekeeping contest that ended on Wednesday."

"In a stretch drive, every bit as torrid as that between Cleveland and those darn Yankees, section two and section four came down to the wire with the score about tied."

The contest and the excitement is all over now, but in the wake of it all, basic safety consciousness has become a reality in our plant.

Sanitation Show

The first International Sanitation Maintenance Show and Conference sponsored by the Industrial Sanitation Management Association, the Association of Food Industry Sanitarians, and the National Association of Bakery Sanitarians, has been announced by William S. Orkin, Managing Director of Orkin Expositions Management. The Show and Conference will be held at the New York Coliseum, October 14–16th, inclusive.

On Committee

J. Lloyd Barron, Manager of the Sanitation Department of National Biscuit Company of New York, is Chairman of the Program Committee for the Conference. Albert J. Burner, Supervisor of Cleaning Standards for the Central Maintenance Division of the Port of New York Authority, and Sydney Brierley, Assistant Department Head of Inside Cleaning for Eastman Kodak Company, Rochester, who is president of the Industrial Sanitation Management Association, are also on the committee which will set up the program for the conference.

According to Mr. Orkin, a program of interest to all phases of the industrial and institutional sanitation field is being arranged. Tentative subjects to be covered in the conference program panel discussions and forums are:

1. "The Elements of Industrial and Institutional Sanitation," including Structural Maintenance, Cleaning Maintenance, Pest Control, Safety and Industrial Hygiene, and Personnel Facilities.
2. "Mutual Aid in Purchasing Sanitation Supplies" by Purchasing Agents and Sanitation Directors.
3. "Analysis of Sanitation Labor Costs," to include Food Plants, Heavy Industry, and Institutions.
4. "Mechanical Aids to Sanitation Maintenance," to include Power Machines, Industrial Washing Equipment, and Elevated Work Platforms.

In addition to the Conference program, said Mr. Orkin, "The First International Sanitation Maintenance Show will offer the greatest array of sanitation and maintenance equipment and products ever assembled for a single showing. We will offer an unusual opportunity for manufacturers to display their newest and best products before an audience of sanitation maintenance professionals from all walks of the industry who purchase or influence purchases of equipment and products."

In a statement in connection with the announcement by Mr. Orkin, Prescott R. Lloyd, President of the Association of Food Industry Sanitarians, said that the Show and Conference is an important milestone toward the recognition of Sanitation Maintenance as a professional field.

"Perhaps this will be the start that will finally produce a professional society composed of sanitarians from industrial, enforcement, and public health groups, and also result in the creation of a National Sanitation Council, similar to the National Safety Council."

Participation Important

"It is important that everyone interested in sanitation and maintenance participate to the fullest in order that the first International Sanitation Maintenance Show and Conference be a successful one."

Instrument-Automation Conference and Exhibit

The Instrument Society of America has selected New York City as the site of its 11th Annual Instrument-Automation Conference and Exhibit. This yearly event is scheduled at the recently constructed New York Coliseum September 17–21, 1956. Reservations for exhibit space are already being received. The New York location has attracted many exhibitors from foreign countries.

Plans Educational Program

The Instrument Society, which is the only national group devoted exclusively to the theory, design, manufacture and use of all types of instrumentation and automation control equipment for industrial, commercial, educational, research and consulting organizations, is making plans for a well-integrated educational program. Clinics, workshops and technical sessions will be conducted throughout the week program.

Space Information

Information on exhibit space can be obtained from Fred J. Tabery, Exhibit Manager, 250 W. 57th Street, New York City, and on the educational program from the Society's national office, 1319 Allegheny Avenue, Pittsburgh, Pennsylvania.

Welding Show

The fourth Welding Show, sponsored by the American Welding Society, will be staged in the Memorial Auditorium, Buffalo, N. Y., May 9 to 11, it was announced by J. H. Humberstone, society president and president, Air Reduction Sales Co., New York. All available space for displays has been assigned. One hundred companies will conduct exhibits.

Will Conduct Conference

Coincident with the show, the society will conduct its annual business meeting and a series of technical conferences. The metals engineering division of the American Society of Mechanical Engineers will, for the first time, join the American Welding Society in sponsorship of four sessions in which both groups have a mutual interest. The welding committee of the Atomic Energy Commission also will co-sponsor a session.

Twenty-one technical sessions, with approxmiately 50 speakers are planned. An innovation this year will be a discussion of safety, health and fire prevention by the society's technical activities committee.

Other Features Planned

Other features planned include a Welding Conference, which will consider practical aspects of welding for industrial executives and a series of educational lectures for engineering students.

The show will feature more live demonstrations of welding processes and equipment than ever before attempted. Floor plans of exhibits have been altered to permit

large demonstration areas and a free flow of traffic to allow visitors to concentrate their interest on particular equipment.

Technical papers will be read, and business sessions of the society will be conducted, at the Hotel Statler. The Auditorium will be used for the exhibits, the educational lectures and the Welding Conference.

Advance registration forms and hotel information may be obtained by writing the American Welding Society, 33 West 39th St., New York 18, N. Y.

Flooded Boilers

A warning against premature use of high-pressure boilers that have been submerged in floods has been issued by Ernest B. Webb, Director of the California Department of Industrial Relations, who gives the following valuable reminders:

No boiler whose foundation, setting, or attachments has been under water, should be used again until a certified boiler inspector determines that the foundation has not been weakened or undermined, and that the attachments and controls have been cleaned and checked and are in safe operating condition. Any brickwork and baffles should be thoroughly and **slowly** dried.

Check Supply Sources

Sources of water supply for boilers and water filters, heaters, etc., should also be checked, to prevent the introduction of mud and other foreign material into the boiler.

Boilers should be operated only at low ratings, and should be opened for cleaning at frequent intervals, until it is determined that all detrimental factors resulting from flooded conditions have been eliminated.

All automatic controls and electrical equipment used in operation of a boiler should be thoroughly checked, and should be operated under close attendance until they are definitely known to be in proper operating condition.

ELIMINATE THIS DANGER ZONE!

You can eliminate this danger zone under any hoist, crane, or other lifting equipment with Bullard-Burnham safety hooks. A pushbutton safety gate makes it impossible for loads to jar loose until the hook is manually unlocked, and also acts as a constant safety gauge indicating whether or not the hook is sprung. Notice that the safety gate leaves the hook's throat 100% clear. The heavy duty safety gate is non-corrosive brass with a stainless steel lock pin that will last for years.

E. D. Bullard Company, 275 Eighth St., San Francisco

Hook on load block

Hook with jaw and jaw-type ball for link chain

Hook with adapter nut for all types of pullers

Write for complete data and specifications

EVERYTHING BULLARD IN SAFETY

T. M. REG. U. S. PAT. OFF.

see our catalog in PLANT ENGINEERING FILE or write for copy

BULLARD

(For details, use Key # O-9 on card on page 71)

KEEPING UP WITH...

CONCRETE MAINTENANCE TECHNIQUES

Consideration of floor maintenance begins with the selection of the flooring material to be installed in anticipation of the point load, impact, and abrasion to which the floor will be subjected. Maintenance ends when the floor can no longer be economically repaired and must be replaced. Between these two extremes lies the field of most concern to plant engineers —maintaining present floors in serviceable condition.

Concrete is by far the most widely used plant flooring material. However, plant engineers are finding that even the best plain concrete floors do not hold up under today's heavy traffic and loads. Experience indicates that concrete floor failures begin with surface wear caused by impact and abrasion. These two forces crush-out the brittle sand aggregate leaving a cavity which enlarges as traffic continues to pound it.

By no means new, but in recent years very widely used, is the technique of incorporating specially processed ground iron aggregate into concrete floor surfaces. Where brittle sand and stone aggregates crush under abrasion and impact, iron aggregate is malleable and withstands these forces. This type of "iron-clad" floor has exhibited exceptional wearing qualities even under heavy, steel-wheeled traffic. This specially prepared iron aggregate * produces an armoured surface about ⅛" thick and is designed for resurfacing, complete slab replacement, or for initial floor installations. Iron aggregate is also suitable for resurfacing heavy-duty aisles, ramps, and loading docks.

An important safety feature of these iron aggregate floors is the non-slip finish achieved by swirl troweling. This turns the iron particles upward and produces many minute ridges of "reinforced concrete." Also to indicate particularly hazardous traffic areas or to clearly mark danger spots, color is often worked into the concrete surface. Color helps to "set aside" these trouble areas and also promotes good housekeeping.

In many smaller repair jobs it is necessary to patch the surface of the old concrete rather than replace it. This is particularly true in key areas where the concentration of traffic makes for unusually short floor life. Several iron aggregate materials for patching are available to plant engineers. A pre-mixed mortar † containing iron aggregate is designed for making tough, non-shrink concrete repairs. It hardens rapidly and bonds tightly to old concrete. A floor that is "better than new" puts the area back in operation as early as 48 hours after placement. The ingredients are accurately combined at the factory to eliminate "mixing errors" and to insure selection of proper materials. The product is suitable for indoor and outdoor use.

In many repairs the patching material must be brought to a thin feather edge around the border of a spalled area. An asphalt patching and resurfacing material § containing specially prepared, ductile iron

* For details on the iron aggregate, use **Key # FM-1** on Inquiry Card on page 71.

† For details on the mortar use **Key # FM-2** on Inquiry Card on page 71.

§ For details on the patching material, use **Key # FM-3** on Inquiry Card on page 71.

FLOOR MAINTENANCE SERIES
Other articles in Dec. and Jan.

Floor Maintenance Developments

aggregate meets the requirements for this type of repair. The material hardens to permit resumption of traffic in 36 hours and does not crush-out or roll under impact or steel wheels. It is, however, designed only for interior use in areas not subjected to heavy concentrations of oil or water.

Many plant engineers today have a special floor problem in "red letter" areas where explosives and highly volatile flammables are stored, handled, or manufactured. In such areas a static spark or friction spark is hazardous. Since plain concrete sparks easily and is not conductive, and asphaltic materials are dissolved by most flammable liquids, neither of these materials is suitable for red letter areas. The safest solution is a new floor or new topping surface that is conductive and spark resistant. A product consisting of metallic aggregate, a conductive cement binder, and a cement dispersing agent produces a floor surface that is spark resistant and static disseminating, yet withstands abrasion and impact of heavy industry. The material is applied as a dust coat over the surface of a fresh concrete slab or topping at a rate of 1.8 lbs. per sq. ft. and floated into the surface. This type of conductive floor ** is relatively inexpensive and extremely durable, and complies with industrial and federal specifications for safety flooring. A special conductive curing compound and a conductive wax are available for installation and maintenance of these spark-safe floors.

Full technical information on any of these products is available from the manufacturer, The Master Builders' Company. Readers can use the key number indicated in the footnotes on the Reader's Inquiry Card.

** For details on the conductive floor, use **Key # FM-4** on Inquiry Card on page 71.

ABRASIVE FLOOR PAINT

Convoy Skid-Proof Safety Enamel contains a non-slip abrasive. It may be brushed, rolled or sprayed on wood, metal and concrete, both indoors and outdoors. It is now available in "Fast Drying Convoy," which drys in one hour and "Acid-Ristant Convoy," which will offer excellent resistance to most acid and alkali exposures. Made by Kelley-Mahorney Co., it is easy to apply and economical. Worn spots may be "touched up." Available in seven colors.

For details, use **Key # FM-5** on Inquiry Card on page 71.

COMBINATION SEAL & FINISH

A new floor treatment that is said to sacrifice none of its heavy-duty properties to achieve fast drying, is announced by Hillyard Chemical Co. The new treatment, "Surfcoat," is a combination seal and finish. It is recommended for wood floors (both hardwood and soft wood) and concrete.

A complete floor finishing job can be accomplished in 4 hours, so that a building operating on a day schedule can finish or refinish all floors overnight with no interruption.

Surfcoat can be used as a base for wax or dressing, but it also is a beautiful finish in itself. It is highly resistant to grease, oil, alcohol, ink, water, and dirt. It cleans easily. For new concrete floors Hillyard recommends initial treatment with Cem-Seal followed by Surfcoat.

Although Surfcoat spreads to a thin film, and covers about 600 sq. ft. per gallon, it is extremely tough and abrasion resistant. The finish stands up under continuous hard wear, for long periods without requiring refinishing. Other features are: lightness in color, providing good light reflection; non-glare mat finish; slip-resistant.

For details, use **Key # FM-6** on Inquiry Card on page 71.

ABRASIVE RESURFACING MATERIAL

A new abrasive resurfacing material especially designed to eliminate slipping and tripping hazards on worn stairways and uneven floors has been recently developed by Robert N. Kimball & Son. This resurfacing abrasive, known as "Duracite," comes in powder form, and is made into mortar by adding plain water. The mortar is easily applied with a trowel.

In addition to the permanent non-slip effectiveness of the surface under wet or dry conditions, this abrasive will form a **solid** bond with such difficult bases as slate, wood, marble, concrete, etc., and can be applied to a feather-edge of only $^1/_{16}$ inch.

The Duracite surface will set rapidly to support foot traffic six or eight hours after installation, and after a few days it will attain a granite-like hardness that is practically impervious to wear, even under severe traffic. There is a choice of six colors so that the new surface can either match or contrast with the base.

For details, use **Key # FM-7** on Inquiry Card on page 71.

INDUSTRIAL FLOOR WAX

Designed for heavy-duty factory floors, the "50-50" floor wax made by Uncle Sam Chemical Co., Inc. requires no initial buffing and provides unusual resistance to scuffing and dirt retention. The new wax is claimed by the manufacturer to be water and slip resistant, to have a hard but glossy finish that is unharmed by freezing, and to resist darkening, oxidizing or powdering.

For details, use **Key # FM-8** on Inquiry Card on page 71.

FLOOR SAFETY CLEANER

Super Safety Cleaner with activated HCP, high cleaning power, will clean all types of floors fast and with complete safety, says Multi-Clean Products, Inc., the manufacturer. According to extensive field tests, it is harmless to asphalt tile, rubber tile, linoleum, terrazzo, concrete, wood, and all other types of floors. Its high-cleaning power is attributed to a new chemical additive, which powerizes the cocoanut oil action instantly, freeing dirt and holding it in suspension. It is said dirt floats away with wet pickup vacuum cleaner, floor squeegee or mop.

Highly concentrated, just 1½ ounces added to a gallon of water, hard or cold, will do almost all cleaning jobs. For heavy wax build-ups, the manufacturer recommends 8 ounces of cleaner per gallon of water.

The cleaner with HCP is also available with a germicide antiseptic which eliminates odors and kills harmful bacteria or fungus organisms.

For details, use **Key # FM-9** on Inquiry Card on page 71.

DRUM HEAD VACUUM CLEANER

Hild Floor Machine Co. announces a new hospital quiet transferable head vacuum cleaner that is readily transferable from one 55-gallon drum to another, making it possible to fill as many drums as are needed. It is also transferable to Hild's 15 and 10-gallon size tanks. The versatile applications for this vacuum head make it possible to perform the work of three different size vacuums.

For details, use **Key # FM-11** on Inquiry Card on page 71.

GIANT FLOOR MACHINE

This giant 31-inch floor machine introduced by Multi-Clean Products, Inc. will polish 10,000 sq. ft. of floor area in 30 minutes. It is said to do the work of four 16-inch machines, and is especially recommended for hallways and large unobstructed floor areas.

The MC-31 has a brush covering area of 855 square inches and will scrub, polish or steel wool a floor. It is equipped with a powerful 1½ hp, 115-230-volt AC motor. It has a sealed and permanently lubricated gear unit. Double planetary transmission is 100% ball bearinged. 2 hp Underwriters' approved, dual type safety switch cuts off automatically when finger grip is released, or may be locked on for continuous operation. Sturdy wheels of non-marking rubber make the machine highly portable for its weight of 156 lbs. Heavy-duty axle prevents sagging or wheel spread. Oilite type bearings on wheels and axle need no lubrication. Easily adjustable handle for operator's convenience.

The MC-31 brush attachment consists of four 12" dia. brushes mounted on ball bearinged drive plates, which are attached to a main driving disc. They are securely held by a special locking device, but are easily slipped on or off to make them quickly interchangeable with other attachments. Brush assembly rotates at 158 RPM causing the free-turning brushes to rotate at half speed in the opposite direction. This brush rotation plus the movement of the machine gives double cleaning and polishing action over an area of 855 sq. in.

For details, use **Key # FM-12** on Inquiry Card on page 71.

HEAVY DUTY ENAMEL

Florhide Floor Enamel is a quick-drying, tough, glossy finish designed especially by Pittsburgh Plate Glass Company for all types of floors or steps of wood, concrete or metal, and also to renew worn linoleum and printed linoleum-type floor coverings.

It is recommended for use on

upright surfaces of wood, plastic, concrete and metal, and for industrial use on floors and dadoes. Its excellent wearing properties and enduring gloss and color make it highly serviceable for surfaces bearing heavy foot traffic; and it is suitable where temperatures vary to a considerable extent and changes are frequent, or where exposure to extreme moisture, direct rays of the sun or other severe climatic conditions are common.

Florhide surfaces are resistant to scrubbing and soap solutions—good floor maintenance requires frequent mopping and scrubbing with soap solutions of varying strength which are injurious to many floor enamels. It also eliminates dusting, a major cause of dirt formation and wear. Under regular conditions, it sets dust-free in two hours and may be re-coated in from six to eight hours. It is economical to use; its usual spread is from 300 to 500 square feet per gallon, one coat, depending upon the nature and porosity of surface. Eleven modern practical colors, in addition to standard black and white, are available.

For details, use **Key # FM-13** on Inquiry Card on page 71.

TRIANGULAR DAMP SWEEPER

Hard to clean corners, once inaccessible with straight or oval shaped brushes, can now be thoroughly damp swept with the new Model #3 Legge Damp Sweep Tool made by Walter G. Legge Co., Inc. A revolutionary triangular brush, designed exclusively for this product, not only permits the maintenance man to clean every nook and cranny, but speeds up damp sweeping of the entire floor.

A special double swivel connects the 5 foot aluminum handle to the triangular brush at its center. This provides flick-of-the-wrist maneuverability. The user may change direction at any time without lifting the implement from the floor.

A sweeping cloth, with taped center hole, is provided with Model #3 Damp Sweep Tool. Launderable, the cloth may be used over and over.

For details, use **Key # FM-14** on Inquiry Card on page 71.

SELF-POLISHING, NON-WAX FLOOR DRESSING

The addition of an exceptionally long-wearing, non-wax floor dressing to its established line of floor maintenance products, has been announced by Masury-Young Company. According to the company, "Poly-Glo" provides three major floor maintenance benefits: 1. Labor-saving ease of application. 2. Excellent slip resistance (UL listed). 3. Sparkling beauty without buffing. It contains no wax or solvents . . . dries in minutes to a hard, glossy, transparent film that will not yellow or discolor even the lightest floors . . . strongly resists heel marking, dirt and water . . . will not dust on wear and strips easily. Poly-Glo may be used to dress asphalt, rubber, linoleum, vinyl, sealed wood, terrazzo, concrete, and all other resilient and non-resilient floors. It may be applied with string mops or lamb's wool applicators, and is available in 5, 30, and 55-gallon containers.

For details, use **Key # FM-15** on Inquiry Card on page 71.

NON-SLIP FLOOR SURFACE

Improvement in X-L Veneer safety floor topping to make it more non-slip and non-skid is announced by The Monroe Company, Inc. It employs a new type of abrasive filler and aggregate which is combined with X-L's synthetic, heavy bodied plastic base material and special solvents.

When applied on steps, inclines and floors, X-L Veneer is reputed to form a thin, tightly-bonded, resilient coating that is slip-proof, wet or dry, and which contributes to the elimination of many accidents. Easily troweled on, just as it comes from the container (no primer needed), X-L Veneer can be used over concrete, wood, steel, tile, mastic or terrazzo surfaces.

Because it is impervious to oil and grease, it is especially recommended for use around machinery. It is also widely used for skid-proofing steel floor plates. Other features are resistance to gasoline, alcohol, fats and chemicals used in cleaning compounds and insecticides. It is also fire retardant.

Other applications include stairways, ramps, catwalks, aisles, shower rooms, lavatories, swimming pools, boat decks, tread areas of airplane wings, and catwalks and running boards of petroleum transport trucks.

Available in tile red, green, light gray and dark gray, the material is reputed to stand up under heavy steel wheel trucking.

For details, use **Key #-FM-16** on Inquiry Card on page 71.

NON-WAX FLOOR FINISH

A new type of floor finish containing no wax and said to be remarkably non-slippery has been developed by the laboratories of The Davies-Young Soap Co. The product is applied to the floor surface with an applicator or mop. It is self-leveling and dries to a hard, smooth, bright, tough finish. Called "Dy-Glo", the finish is easily maintained by damp mopping. If desired, it can be buffed and polished with a steel wool pad under a floor machine. The manufacturer claims that the finish will outlast ordinary water waxes, that the hard coat gives maximum protection to the floor, and that it can be removed if necessary.

For details, use **Key # FM-17** on Inquiry Card on page 71.

CONCRETE GRINDER

The new concrete grinding attachment announced by American Floor Surfacing Machine Co. converts the 16" American Floor-King into a portable electric grinder for use on stone-hard surfaces of all types. The attachment has six large grinding stones that will grind down old or new concrete, brick, terrazzo, tile and slate surfaces. The machine is said to function without shock or vibration and to require no special training or experience for satisfactory operation.

The company has also developed a new heavy-duty wire brush attachment for the thorough cleaning of industrial-commercial concrete, brick and end-grain wood block floors. It is particularly efficient in removing heavy deposits of grease, dirt and embedded metal cuttings.

For details, use **Key #-FM-18** on Inquiry Card on page 71.

EXPLOSION-PROOF VACUUM CLEANER

The H-500 Explosion-Proof Industrial Vacuum Cleaner recently introduced by Multi-Clean Products, Inc., and approved by Underwriters' Laboratories combines portability, efficiency and safety. It is recommended for locations where there is danger of explosion. The U.L. approval covers operation of the unit for wet or dry vacuum cleaning in Class 1, Group D locations—atmospheres containing gasoline, petroleum, naphtha, alcohol, acetone, benzol, lacquer, solvent vapors and natural gas, and Class 2, Group G locations—atmospheric conditions containing grain dust, flour, starch, cocoa, etc. . . . any type of dust which comes from processing any kind of grain.

According to the manufacturer, the H-500 Vac can be used safely in the presence of explosive gases, vapors or dust in mills, grain elevators, chemical plants, petroleum refineries, gas plants and distilleries, etc. It is particularly suited for cleaning floors, walls, overhead pipes, machinery or stock bins where grease, chemicals or other flammable materials are present. Because it works equally well for wet or dry pickup, it may be used to clean combustible materials from storage tanks.

Among the construction features are: a totally enclosed, ⅞ hp. 115-volt motor; Crouse-Hinds heavy-duty switch; explosion-proof casters.

For details, use **Key # FM-19** on Inquiry Card on page 71.

Injury Rates Hit All-Time Low

Injury rates in manufacturing and nonmanufacturing industries hit new lows in 1954, according to the latest figures released by the Department of Labor's Bureau of Labor Statistics. The average injury-frequency rate for manufacturing dropped to 11.9 disabling injuries per million employee-hours worked, setting a new low for the third time in as many years. This rate was 11 percent below the previous record of 13.4, set in 1953.

Record Praised

"This is a magnificent record," Secretary of Labor Mitchell commented in releasing the report. "These gratifying resul's reflect great credit to everyone associated with accident prevention and demonstrate fully that real progress can be made when management and employees work together for safety. There are, however, some areas in which little or no progress was made in 1954. These should be the prime target areas for the future."

Improved Average

All but one of the manufacturing groups improved their average during 1954, with rate decreases ranging from 7 to 25 percent. The best showing was made by the ordnance, primary metals, machinery (except electrical), and paper groups, recording average injury-frequency rate decreases of 25, 17, 16, and 16 percent respectively.

Although rate decreases prevailed, there were 10 detailed classifications of manufacturing for which the 1954 rate was 5 or more percent higher than in 1953. The jewelry, silverware, and plated ware industry led this group with an injury-rate increase of 25 percent; in veneer mills, the rate rose 18 percent.

Hits New Low

The downturn in injury rates also extended to most nonmanufacturing industries. The construction group, for example, hit a new record low for the fourth succes-

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(For details, use Key # O-10 on card on page 71)

sive year; while telephone communications retained its position as the industry with the lowest injury-frequency rate—1.0. The injury rate for wholesale and retail trades —11.4—improved for the third successive year, but was still above the post-war record low of 10.9, established in 1949. Most of the industries in the other nonmanufacturing groups i.e., transportation, utilities, finance, service, and government, showed an improvement.

Had Favorable Rates

The following industries had the most favorable 1954 injury frequency rates. In manufacturing: synthetic rubber—1.6; synthetic fibers—1.8; miscellaneous communication equipment—2.7; explosives —2.8; ophthalmic goods—2.9; aircraft manufacturing—3.2; electric lamps (bulbs)—3.2; rubber footwear —3.4; electrical equipment for vehicles—3.6; radio tubes—3.8; motor vehicles, bodies, and trailers—4.1; miscellaneous industrial organic chemicals—4.1; tires and inner tubes—4.3; blast furnaces and steel mills—4.3; cement, hydraulic—4.4; photographic equipment and supplies—4.7; and 4.9 for radios and related products. In nonmanufacturing: telephone communications—1.0; banks and other financial agencies—2.1; insurance—2.3; radio broadcasting and television—4.4; and for retail apparel and accessories—4.6.

Reduced by Day

In general, the seriousness of the injuries during 1954 remained about the same as in the previous year. The average time charge per disabling work injury—including deaths and permanent impairment —for manufacturing was 85 days, a reduction of only one day from the previous year. For temporary disabilities only, the average recovery time was 19 days.

Lowest on Record

The standard severity rate (which represents the average number of days charged because of disabling injuries per 1,000 hours worked) was 1.0 in 1954—the lowest on record. Stevedoring had the highest severity rate—17.2—of any industry.

Absenteeism

Absenteeism among employed persons is a subject of considerable concern to industry, according to the most recent publication of the Research Council for Economic Security, Chicago. Illness absences alone, by the most conservative estimates, cause the loss of the services and production of one million workers every year, valued at approximately $5 billion. If all data were available, the loss from absenteeism might be found to be as much as $10 billion.

"This is a problem," stated Gerhard Hirschfeld, Director of the Research Council, "which is in need of much more attention than it has received before. In addition to the production loss, there is the direct loss of wages and income for the workers and the cost of medical care. These are considerable even with the extensive protection of group sickness compensation, hospitalization, surgical insurance, and prepaid plans prevalent in industry today."

Discussions Summarized

The Research Council book, entitled **"Absenteeism,"** contains a summary of the discussions at a seminar and workshop on absenteeism conducted by the Council last year. It also includes selections from the exhibits that were used at the seminar and additional specially adapted source material. Participants in the seminar were people responsible for personnel administration, health and medical care programs, and the administration of insurance or employee benefit plans. Represented were both small and large companies in various industries from different parts of the country.

The seminar was an outgrowth of the Research Council's Study of Prolonged Illness-Absenteeism, which is being completed this year. Preliminary reports from the study have been used by many of the participating establishments as a basis for evaluating their absenteeism problem, revising control records, instituting new procedures, developing medical care programs, and revising employee benefit plans. The conference was planned so that these experiences, and the techniques and tools that had been developed, could be pooled and reviewed.

"Some striking facts and figures have come to light from our prolonged illness-absenteeism study," reported Leon Werch, Research Director for the Council. "Purely for purpose of illustration we might use the simple round figure of 40 million employed persons and a low estimate of three absences of more than four weeks duration per 100 employees per year. At that rate there are some 1,200,000 prolonged absences each year. The average absence is about ten weeks. We are, thus, experiencing a loss of 240,000 man years, valued at approximately one billion dollars.

"The direct cost to the employees also is considerable. The data to date indicate an average net medical-care cost of $150 per prolonged absence, suggesting a total bill of $180 million per year. This is the direct, net cost to the workers remaining after the receipt of all benefits under hospitalization, surgical and medical-care insurance, and other prepaid-plans. In addition, the net wage or income loss, over and above sickness compensation and sick-leave allowances, is perhaps $500 million. These, it should be noted again, are the net costs of the prolonged absences alone.

"These are losses that cannot be ignored; they are the source from which arise fear and the feeling of insecurity. But programs for concerted, planned action are rare indeed. Our motivation for the seminar and this book, therefore, was: to stop and think about what could be done about absenteeism." Among the recommendations and conclusions reported in the book are:

1. Adequate records of absenteeism should be maintained by every company. Some central agency should make available national summaries of the experiences of representative establishments.

2. The real causes of absenteeism are many. They involve general factors of morale, attitudes toward the supervisor and toward the company, proper job placement, sense of responsibility, home and family influences and problems, the health of the worker. Plans which depend solely on get-

ting rid of the so-called "absence-prone" worker or disciplining the chronic absentee miss the mark and accomplish neither the prevention nor the control of absenteeism.

3. A good deal of emphasis is placed on the health of the worker. A company medical program can have an important role in assisting with the prevention and control of absenteeism. This is not possible, however, if the program is confined to the maintenance of a first-aid station or is limited to dealing only with job-connected disabilities. It should include periodic medical examinations and follow-up of illnesses, which would permit early diagnosis of possible serious disability. It should assist workers in securing proper treatment and care. The book includes suggestions for the assembling of necessary data and the use of the data in planning or improving the medical care program.

4. Employee benefit plans are discussed in connection with the importance of good morale and the feeling of security as factors affecting the rate of absenteeism. It is recommended that the plans be carefully evaluated to determine how they can be made effective aids in the absenteeism control program.

5. Experience indicates some specific needs and gaps in present plans. Benefits most frequently are available only upon hospitalization. A major proportion of the plans provide benefits—mostly in the form of partial indemnity—for physicians' services only in connection with surgical procedures. Recently, but still in a limited number of instances, there has been extension of benefit provisions to cover prolonged disabilities. Periodic examinations and follow-up care for executive and key supervisory personnel have become increasingly prevalent because of the dividends in improved health and usefulness on the job. There are, however, only a very few examples of the use of employee benefit plans to make available to all workers more easy access to complete and responsible medical service, so that early diagnosis and prompt, proper care can make their contribution to lessening the incidence and severity of prolonged illness-absenteeism.

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A Breck Industrial Preparations Booklet will be forwarded to you upon request.

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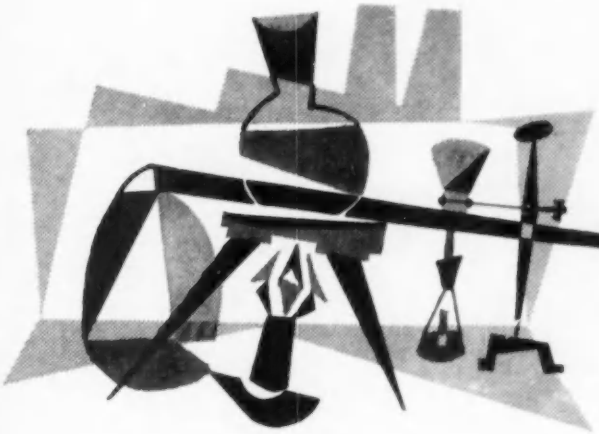


industrial hygiene

Health Standards for Industry

The standards for health maintenance certification by the Occupational Health Institute were drawn up by the Industrial Medical Association (See page 44 of the November, 1955, issue.) Two types of **minimal** standards have been established: one for industrial organizations of 100–2500 employees, and the other for industrial organizations of 2500–25,000 employees. The standards for the first group are given below. The medical requirements for the larger organizations will be printed in the March issue. Additional information about the certification can be obtained from: Occupational Health Institute, Inc., 6 E. 39th St., New York 16, N. Y.

Minimal Standards for Industrial Organizations of 100–2500 Employees

A. The organization has a stated medical policy. This policy includes the following factors:

(1) Pre-placement medical examinations are being performed.

(2) Periodic medical examinations are performed on all employees who are exposed in any way to potential and actual industrial hazards.

(3) Routine periodic inventories are encouraged for all employees and actual means are made available for such examinations whenever such examinations are considered practical.

B. The professional staff is sufficient to carry out the above stated policy. Members of the medical and nursing staff are competent to perform the duties prescribed in the stated policy. They are graduates of accepted schools of learning; are in good standing; and licensed to practice in their respective states or provinces. They are worthy in character and in matters of professional ethics.

C. Facilities are available for the performance of competent pre-placement and voluntary periodic medical inventories (these facilities may be located within the confines of the plant proper or in the offices of the consultants or part-time physicians whose duty it is to carry out the prescribed company policy).

D. A system of adequate and confidential records is maintained.

E. A competent consulting staff is maintained.

F. Sufficient attention is given to plant environment, i.e., sanitation, safety precautions, industrial hygiene.

G. The medical director, medical advisor or chief medical officer reports to some responsible member of management who is conscious of and familiar with managerial interpretation of medical policy and whose assistance can be relied upon to help maintain the aforementioned standards.

H. In addition to facilities for pre-placement and periodic inventories, a well-equipped dispensary for emergency care is maintained.

Edited in cooperation with
OCCUPATIONAL HEALTH INSTITUTE
Educational affiliate of
INDUSTRIAL MEDICAL ASSOCIATION

Safety Data on Hydrogen Peroxide

The publication of a new, revised safety data sheet on hydrogen peroxide (SD-53) has been announced by the Manufacturing Chemists' Association. The 20-page booklet, part of a continuing series of safety data sheets, gives properties and essential information for the safe handling and use of hydrogen peroxide, including material on shipping containers, storage, waste disposal and health hazards and their control.

Copies of Chemical Safety Data Sheet SD-53, Hydrogen Peroxide, may be obtained from the Manufacturing Chemists' Association, 1625 Eye Street, Northwest, Washington 6, D. C., at 30 cents each.

Attention on Problems of Aging Workers

The problem of the advanced age groups has taken on a special significance, particularly in the last 50 years, as a result of the enormous progress achieved in every field of natural science—physics, chemistry, biology, hygiene, medicine.

Victims of Progress

In the United States, during the span of only one generation, the average life expectancy has risen from 48 years in 1900 to 68 years for men and 70 years for women. More to the point, the age group which has reached the age of 60 today may very well be biologically equivalent to the 45-year old group of the beginning of the century. But because many concepts and rules regarding age standards in industry and the community remain the same as they were 50 years ago, those whose life span has lengthened because of the progress of science and civilization have become victims of that progress.

As a result of the slow pace of social and economic development and, to a greater degree, of the comparatively slow rate of change of the psychology which has not kept pace with the rapid progress of science and techniques, a suitable place in the community has not yet been found for these advanced age groups. With the passage of time, society and industry must solve this if they do not want to see it become a hindrance to further progress.

13 Million Over 65

Today there are in the United States more than 13 million people who are over 65. (In 1900, the number was three million.) By 1960 the total will be 16 million, and by 1970 the group will comprise ten to eleven percent of our entire population. These figures are sufficient to make clear the scope of this problem for the country. It is apparent that the great scientific achievements of the past decades have brought man closer to the ideal of an active old age for all. Sociology and economics must find a practical way of solving the problems posed by this increase in the average life span.

It is true that advanced age brings physiological changes—some deterioration that comes purely from "growing old"—but it is not a period that is necessarily disabling. Scientifically speaking, the age of 60, 65, or more, as a working limit is pulled out of a hat.

A recent survey * brought a wide variety of opinions on this question from industrialists, labor unions, consulting engineers, foundations, doctors, deans of medical colleges, medical societies and medical editors. One vice-president, for example, reported that "chronological age, not physiological, should be the standard for separation from employment"; while the president of a steel company expressed his attitude that "the ability to perform a task adequately is a better yardstick for retirement than any particular age limit. The general feeling is that the criterion of chronological age is not a satisfactory one." *

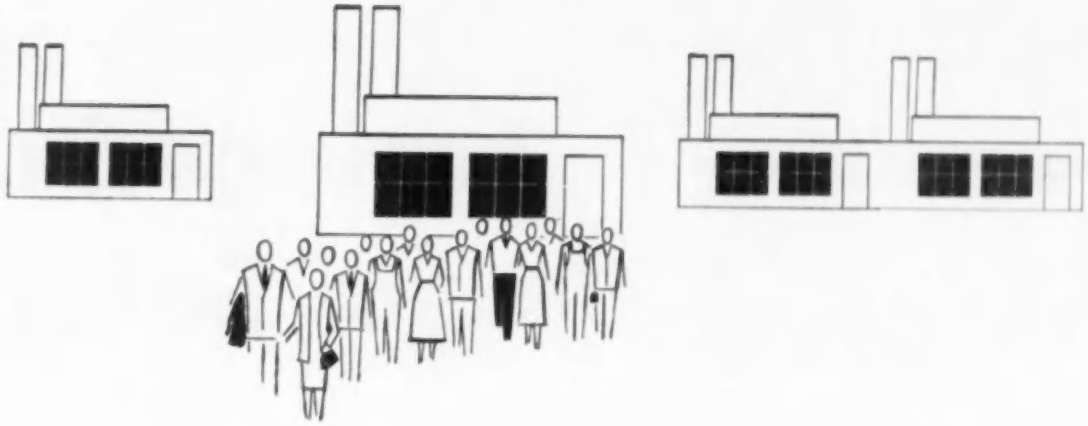
Inconsistent Aging

Chronological age is a simple matter stated by one's birth certificate—one's number of birthdays. It is age by the clock. Physiological age is far more complex. It involves mind, hand and heart; arteries and the thickness of their walls; the pituitary gland, back muscles and eyesight. It is not an even process and all our organs do not age in a proper marching order. The same person may have a "young" heart, an "old" stomach and a "middle-aged" colon. If the aging process is this uneven and variable within a single person's body, obviously its range of variation in the whole population is enormous. This problem grows constantly more pertinent as science finds ways of extending the life span.

Lead Productive Lives

Most people today are able to lead productive, useful lives at 60, 65 and 70, and to refuse them the opportunity to continue in remunerative work is to deprive society and, in particular, industry of the wis-

* From a recent survey by Frank A. Calderone, M.D. conducted in March 1955.



dom and long experience which are produced only by many years of living and of service in an organization.

Deans of medical colleges likewise agree that "retirement should be governed by physiological factors." One respondent to the survey pointed out that "though there is no physiological yardstick comparable in accuracy to the calendar, still criteria might be established to support the fact that many workers past 70 or even 75 are more useful than others at 55 or 60." *

Flexible Program

In the interest of the national economy and the adjustment of the older individual, compulsory retirement policies should be replaced by flexible retirement programs—that is, retirement must be based upon the productivity of the individual rather than a fixed chronological age. It should be understood that there is nothing wrong with retirement, if it is by choice. In general, the consensus is that there should be an age range—a period of ten years—in which retirement should be possible but not compulsory. Within that range, the health and the competence of the worker, and not the date of his birth certificate, should be the factors determining his retirement.

Flexible Retirement Feasible

Flexible retirement is feasible if more health examinations are provided in order to keep the aging worker functional for a longer time and to permit the industrial physician to serve as a member of the team that decides whether a worker is to be transferred to work more suitable to his changed capacities.

In the business world, the survey showed that "executive opinion, both lay and medical, were in agreement that compulsory retirement should depend not on age, but on the individual's ability to do his job.

"Insurance executives seemed primarily concerned with financial security of the worker after retirement, irrespective of cause.

"Union officials all responded in favor of voluntary rather than mandatory age retirement, contrary to what some other respondents indicated they felt union thinking to be. Union respondents felt that industries should set up adequate disability programs, preferably with the Social Security Administration to cover the situation. They were emphatic that provision should be made for the retired man at the time he needs it most. The point of view was also expressed that the experience of the older worker will often outweigh the advantages of separating him from employment." *

Causes Deterioration

Medical and psychological research indicates that physical and mental deterioration results from the continued inactivity that is characteristic of present day retirement living. It is not economically sound to retire people from gainful employment and then allow them to deteriorate to a point where some type of hospital facility and custodial care must be provided for them.

The survey revealed that heads of medical societies favored the physiological approach, and one respondent pointed out that "not only will workers be happier if allowed to work as long as possible but that the whole economic system will benefit thereby." *

Potential Hidden Quantity

The potential worth of our mature and experienced older people is still a hidden quantity. The riches of this reservoir have scarcely been tapped. But in a period of history that relies on machines to replace brawn, a period characterized by shorter working hours and greater opportunities for leisure and creative enjoyment, it should enable the aging to find a pattern of useful life. Industry and labor have a joint responsibility to help them find it. The Occupational Health Institute will cooperate in every effort toward the proper solution.

Gleaming new cafeterias like that shown, provide employees hot, nourishing meals, offer facilities for banquets, meetings.

Eating Our to Safety

Not too unlike the armies of Napoleon, which historians tell us travelled on their stomachs, are the millions of well fed but ever hungry factory workers who comprise this country's mighty industrial army. For while modern production methods and machinery have geared our industrial output to ever greater heights, the gears are manned and directed by the increasingly skilled worker whose health, morale and efficiency are still strongly influenced by his appetite.

25 Years of Specialization

Specializing for the past twenty-five years in satisfying such appetites is Crotty Brothers, Inc. of Boston, a pioneer in food service management. Since its modest beginning in 1930 serving hot lunches to employees in a small textile mill in Massachusetts, the firm has expanded so that it now lists operations in 75 cities in 20 states which range from Maine to Texas. Operating both cafeteria and mobile in-plant feeding units, Crotty presently boasts well over 100 clients, many of whom have been with them for over twenty years.

Andrew J. Crotty, President of the firm, believes that much of the growth of in-plant feeding can be attributed to the trend of management to move their plants to the suburbs where outside restaurants are scarce and hardly accessible during the short lunch periods.

Mr. Crotty also feels that industry is recognizing the strong safety factor in the system. He recently stated, "Accident rates have gone down. Workers are more alert after eating hot, nourishing food, or after a coffee break, and consequently are more cognizant of the many hazards that cause accidents. Less accidents mean less lost work hours . . . ergo greater production and efficiency."

Must Be Specialized

Food service management must be a specialized business and consequently tailors its services to meet the needs of the individual plant. There is no such thing as a master menu, as management discovered

Coffee break time at an assembly line as workers line up for stop at food cart. Rest periods like this are strong factors in prevention of accidents.

Way

• • •

Trained cooks and dieticians make lunch hour and the cafeteria a refreshing break for the workers. Salads, appetizers, desserts are attractively arranged.

how much tastes differ. Nationality of the workers, geographic and custom differences all play a part in the selection of menus. An item served at one plant may never appear in one a few miles away. In Texas highly seasoned foods, like chili, are very popular, but would be replaced by Boston baked beans in New England.

Experts Supervise Nutrition

The company maintains strong inventory control even though it buys most of its food locally, thus becoming a part of each community whose plant it serves. Personnel control is also very strict with an elaborate system of training courses. In addition to the personnel attached to each plant, a roving group of supervisors, nutritionists and food specialists are available at all times.

Whether it's servicing hundreds of employees in a large modern cafeteria like the one in the United States Rubber Company's new four story warehouse and office building in Naugatuck, Connecticut, or simply feeding a small office staff like in the National City Bank in Evansville, Indiana, well-planned, hot nutritious meals are always the result of this efficient operation. Paper cups are a heavily used item; both for offering various types of salads and beverages on the service counters of the cafeterias and on the rolling food wagons which go into every department of the plant during 10 minute "coffee breaks." Paper service, Crotty feels, makes for economy because of the two expensive commodities it reduces—labor and replacement of broken china and glass.

Large attractive cafeterias, such as those found in the Portsmouth Naval Shipyard in Portsmouth, New Hampshire, or the Royal Typewriter Company in Hartford, Connecticut, also serve as social gathering places. Banquets, parties and even large meetings may be held in them. This "club house" facet of their use appeals to employees and contributes greatly to company morale.

Played Major Role

The era of the lunch box and thermos bottle seems to have undergone a period of major change with a new, healthier era of better balanced meals being ushered in. As they celebrate their twenty-fifth anniversary of food service management, Crotty Brothers, Inc., can look back on having played a major role in this happy and necessary transition that has contributed so strongly toward keeping the wheels of industry turning more powerfully by keeping the men who turn them better fed.

Picture credits: Page 40, U. S. Rubber Co., Mack Truck Co.; page 41, Dixie Cup Co.

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Chemical plants, paint and starch manufacturers, refineries, distilleries, flour and grain mills—and other industries where electric sparks are a danger but where explosion-proof equipment available heretofore was too large and cumbersome—are now able to cut cleaning time and costs to a fraction. By using interchangeable attachments, a variety of clean-up jobs can be performed with HILD's Explosion-Proof machines, from floor scrubbing to dust and liquid pickup.

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(For details, use Key # O-13 on card on page 71)

Accidents from Emotional Lows

Most accidents in industry occur when workers are in a low emotional state, according to a study made by Dr. Rexford Hersey, associate professor of industry at the University of Pennsylvania.

The study made by Dr. Hersey, an industrial psychologist, involved the analysis of more than 800 accidents. Its results are revealed in "Zest For Work," a book published upon his completion of a long-range study of various factors which influence the productivity, safety and loyalty of workers.

"Although emotional lows, both cyclical and incidental, can be expected to cover less than 20 percent of the average worker's 35-day emotional cycle, almost 60 percent of the accidents occurred during these low periods," Dr. Hersey reported.

Additional 20 Percent

"An additional 20 percent were recorded when the workers were experiencing high cyclical periods, while the remainder occurred during periods classified as neither abnormally high nor low."

The incidence of accidents during the emotional highs was attributed by Dr. Hersey to two factors: when the elation and physical vigor become too high, the possibility of accidents fades into insignificance in the worker's mind and tends to make him careless; further, such a period of elation often stimulates him to speed up production to an extent that is incompatible with the observance of ordinary safety precautions.

On the basis of his findings, Dr. Hersey urges that more attention be paid to the emotional state and day-to-day adjustment of the individual worker as a "most vital" aspect of accident prevention.

"The better adjusted and interested the worker is in his total environment, both plant and home, the better able he is to control his lows, whether cyclically or environmentally caused," he stated.

"However, even the best adjusted worker will likely have his times of crisis, which the foreman should be alert to detect and, if possible, direct into harmless channels.

"Such an approach fosters a situation in which true employee-management cooperation tends to thrive naturally."

Prevention Medicine In Industry

A broadening concept of industrial medicine recognizes the industrial employee as "an individual with his own talents, problems, characteristics and attitudes," a General Motors executive told the symposium on medical education and industry at Mellon Institute.

Discussing "medicine and manpower," H. W. Anderson, GM vice president in charge of personnel, explained that years ago an industrial doctor was listed

as a chief surgeon who worked in a plant hospital or first aid station.

"His job was to patch up the injured employee," Mr. Anderson said. "Today we employ medical directors and industrial physicians. They do their work in medical departments."

"Only a small part of their time is taken up with treatment of employees who have been injured in plant accidents or who may be suffering from an occupational disease." This reflects the great progress made in industrial safety and industrial hygiene. It enables the industrial physician to devote the major portion of his time to the much more constructive field of preventive medicine."

Industrial physicians now concentrate on selective employee placement, matching an individual's capabilities with various job requirements. They study worker reaction to environment and conduct periodic health examinations.

The examinations, Mr. Anderson explained, give industrial physicians opportunity to diagnose non-occupational diseases in early stages.

"Early tuberculosis, diabetes, heart disease, cancer, gastro-intestinal disorders are increasingly being recognized by means of these routine checkups. Although conditions may not be as acute, these examinations also bring referrals to the dentist and the opthalmologist," he said.

Meanwhile, he added, an employee is able to take necessary steps to maintain his own and his family's health through such benefit programs as sickness and accident insurance, medical and surgical care and hospitalization.

"We look upon community health as a team effort and our industrial physicians cooperate fully with the other physicians in the community toward this objective," the speaker declared. "We encourage plant visits by county medical societies as one means of promoting better understanding of common problems."

Industrial Recreation Conference

The Tenth Annual Industrial Recreation Conference will be held at Purdue University, February 18, 19, and 20, 1956, under the sponsorship of the School of Science, Education, and Humanities and the Division of Adult Education. The oldest industrial recreation conference in the country, the event annually attracts industrial personnel from all parts of the United States and Canada.

Cooperating organizations include the American Association for Health, Physical Education, and Recreation; National Industrial Recreation Association; Indiana Association for Health, Physical Education, and Recreation; Indiana Manufacturers Association; Indiana Personnel Association; and Indiana State Chamber of Commerce.

Dr. Jackson M. Anderson, formerly of Purdue and now assistant executive secretary and consultant in recreation and outdoor education for the American Association for Health, Physical Education, and Rec-

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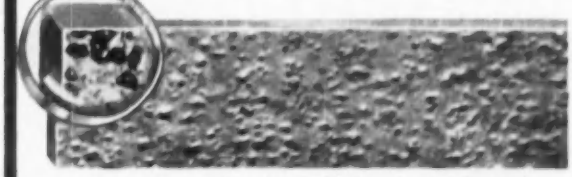

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reation, again will serve as conference chairman. He is the author of "Industrial Recreation," published recently as the first complete book on this subject.

The program will include a how-to-do-it session on preparing employees for retirement. Other group meetings will examine trends in industrial recreation, the problem of understanding the individual in group relations, and determine what constitutes a balanced program. One of the most valuable sessions will be the "Problems Clinic," where conference participants may present individual questions or problems to a panel of experts.

Representatives from business and industry, institutions, and public and private agencies throughout the country are invited to attend. Reservations may be made or information obtained by writing to: Industrial Recreation Conference, Division of Adult Education—Conferences, Purdue University, West Lafayette, Indiana.

L. I. Nurses Seminar

The long Island Industrial Nurses Association is scheduling its second annual educational program, "Nurses in Industry," at Adelphi College, Garden City, L. I., N. Y. The program for the four Tuesday meetings (8–10 P.M.) is as follows: Feb. 7—Emotional Problems, Feb. 14—Scheme of Control for Orthopedic Problems, Feb. 21—Female Dysfunctions, Feb. 28—Industrial Toxicology. The fee for registered nurses is $15. Checks should be made payable to the Association and mailed to: Mrs. Monica Kissling, Apt. 6B, 357 Jackson St., Hempstead, N. Y.

Safety Data on Naphthalene

The publication of a new safety data sheet on naphthalene (SD-58) has been announced by the Manufacturing Chemists' Association. The 12-page booklet, part of a continuing series of safety data sheets, gives properties and essential information for the safe handling and use of naphthalene, including material on shipping containers, storage, waste disposal and health hazards and their control.

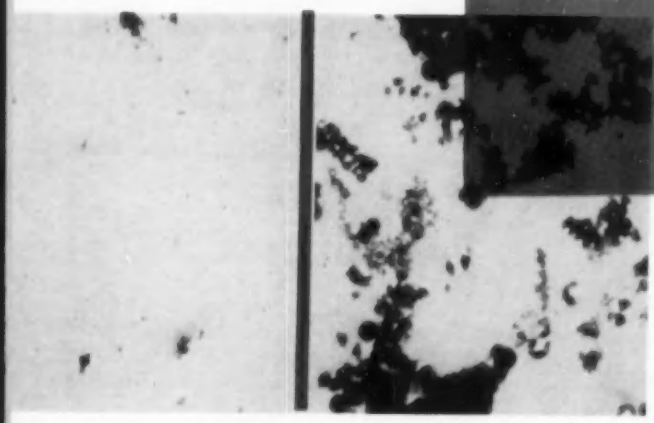
Naphthalene has wide usage as a starting point in the manufacturing of many chemicals and in the disinfectant, dye, explosive, fungicide, leather, lumbering, paint and varnish, petroleum, pharmaceutical, plastics, resins, rubber and other industries.

Although naphthalene is not classified as a dangerous chemical, the MCA recommends that persons engaged in its transport, handling and use be familiar with the fire and explosion hazards which exist and with the need for protective clothing, particularly when the molten substance is handled.

Copies of Chemical Safety Data Sheet SD-58, Naphthalene, may be obtained from the Manufacturing Chemists' Association, 1625 Eye Street, Northwest, Washington 6, D. C., at 30 cents each.

Filters and Tests Assure Clean Air at Atomic Lab

Electron microscopes play important part in keeping air safe for atomic laboratory employees. Daily filter study serves research.



Picture at right shows particles in filter as air enters cleansing system, the one at left presents clean filter as air moves into laboratory.

Particles so small it would take 10,000 of them placed side by side to equal the thickness of a human hair are constantly removed from air entering and leaving many areas of the Knolls Atomic Power Laboratory, which is operated for the Atomic Energy Commission by the General Electric Company.

In laboratory areas where radioactive materials are present, even air brought in from outside is cleansed of many particles, some of which carry the normal background of radiation found in nature. As a result, it is cleaner than air in the surrounding countryside.

According to Louis J. Cherubin, supervisor of Health Physics at the Laboratory, many precautions are taken to assure that no worker at KAPL is exposed to harmful amounts of radiation that might ride on airborne particles.

Residents of the area are likewise protected by filters that cleanse air exhausted from the laboratory.

The reason for special efforts to remove extremely small particles, according to Joseph J. Fitzgerald, a health supervisor of Radiological Chemistry and Physics at KAPL, is that the smaller the particles, the easier they penetrate to the lung's lower recesses where cleansing action of the organ is less efficient.

Large particles that lodge in the upper part of a person's lungs are swept out quickly by cilia, special hair-like cleansing mechanisms, he explained.

He said that all particles, even those which can only be seen by the electron microscope, are potential carriers of radioactivity in "hot" areas.

In the history of KAPL, there never has been an injury due to radiation, thanks to the staff of the health physics unit, which is engaged in a continuing effort to improve the efficiency of present air-cleansing methods.

Miniature intake and exhaust systems are set up and various paper filters tested to determine at what air speeds most particles are removed. To study the way that dust is trapped by filtering materials, special replicas of filter papers are made from silicon dioxide molds that hold dust particles in place after filters have caught them.

Once the dust particles are fixed in place, the paper is dissolved and the dust particles counted with the aid of an electron microscope.

Best filters to fit the job are chosen from results of these meticulous tests.

Pictures by courtesy of General Electric Co.

Industrial Sanitation Affects Public Health

Industry's effort to become better housekeepers has been an important influence in improving public health and sanitation generally, believes Leo J. Kelly, Executive Vice-President of the National Sanitary Supply Association. He says that industry has related sanitation programs directly to profit as well as to health aspects.

Industry has learned that good sanitation improves morale, which automatically cuts costs by increasing efficiency and output. Management has become aware that no one prefers to work in a dirty place if a cleaner one is available.

Programs Effective

The public generally, in regarding sanitation programs, has thought of them primarily in terms of the health issues involved, largely because of effective educational programs by medical and other groups, and has been less aware of the economic aspects of cleanliness (environmental sanitation). Now, however, the public is learning from industry and attaching the same sort of economic reasons to cleanliness as management does. The public is more aware than ever that preventing the spread of diseases through proper sanitation actually pays dividends by eliminating expensive medical care and hospitalization and simultaneously maintaining earning power.

Twenty Years Added

It is significant, thinks Kelly, that approximately 20 years have been added to the average life span in this country in the last 50 years—and that during these same 50 years industry itself has made the greatest strides forward in improving environmental sanitation within its own plants.

Safety Measures for Static Explosions

An authority on static electricity has urged protective measures and an educational program to prevent explosions in hospital operating rooms.

"Safety in operating rooms is of serious concern and a vital matter to the hospitalized public," Robin Beach, President of Robin Beach Engineers Associated, Brooklyn, told a safety session during the Winter General Meeting of the American Institute of Electrical Engineers in New York.

In Public Interest

"In the public interest, as well as the welfare of hospital personnel, safety principles and practices relating to electrostatic explosion hazards, as they apply to the day-by-day performance of surgical teams in operating rooms, should be inculcated in the doc-

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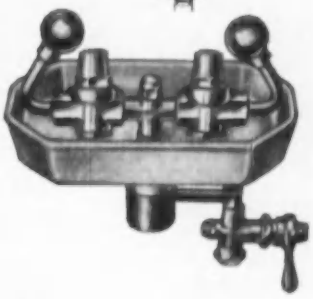
HAWS EYE-WASH FOUNTAINS

Time elapsing between the accident and arrival of medical aid, is too often a cause of permanent eye injury. Bridge this time gap with a HAWS Emergency Eye-Wash Fountain. Installed at convenient locations, these HAWS safety devices are instantaneously ready when such accidents occur.

The HAWS Eye-Wash Fountain washes injurious chemicals out of the eyes with clean water at controlled pressure and volume. It is also available with Drench Shower Attachment...completing an emergency station for your employees' protection.



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tors, anesthetists and nurses by the most modern instructional methods and through the best informational channels currently available."

Suitable Conductivity

Dr. Beach said that "In principle, the elimination of electrostatic hazards in operating rooms resolves itself to the provision of suitable conductivity into each and every facility within the operating room, including especially the flooring and the clothing and footgear of the personnel. In regard to flooring, moderately conductive properties are preferred to high conductivity.

No Electric Sparks

With conductive qualities provided throughout, no accumulation of static electricity can exist on facilities within hospital operating rooms; and, hence, no electric sparks can occur to ignite ambient flammable mixtures.

Legislative Control of Radiation Exposure

National Bureau of Standards Handbook 61, **"Regulation of Radiation Exposure by Legislative Means,"** has been announced by the Government Printing Office in Washington, D. C.

Prompted by repeated inquiries from individuals and groups seeking guidance and information, this handbook presents the problem of radiation in relation to its possible control by state or municipal authorities. This topic is very new to all but two or three states. At this time, only two states have comprehensive regulations designed to control all forms of ionizing radiation, and a few other states are developing such regulations.

Basis for Regulations

This report is based on studies of radiation control conducted by the National Committee on Radiation Protection under NBS sponsorship. The material it contains will provide a convenient and suitable basis for the development of uniform radiation-control regulations that can be used by states where the need for regulation may be felt. The 60-page handbook, which includes six tables, can be purchased for 25 cents per copy from the Government Printing Office, Washington 25, D. C. Foreign remittances must be in U. S. exchange and should include an additional one-third of the publication price to cover mailing costs.

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Self-Sticking Safety Signs

Unskilled help quickly puts up Brady Safety Signs—without nails, screws, or tools. They stick and stay stuck to any surface.

The signs you need are among the 500 different Brady Self-Sticking Accident Prevention Signs. Wordings, colors, and sizes are recommended and approved by ASA and NSC. Write for free samples and Catalog 145-D.

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(Use Key # O-21 on Inquiry Card on page 71)

Achievements and Awards

We welcome case histories of programs that have done a good job for you in preventing accidents. Merely address your letter or memorandum to The Editor, Safety Maintenance, 75 Fulton St., New York 38, N. Y. and enclose with it an outline of how you organized and launched your safety programs or actual literature you used in publicizing them. Safety is a cooperative venture—what helps one helps all.

A trailer stopped and parked at the crossroads of America recently for a week and didn't get a parking ticket!!

The Place: New York City's Times Square, where an Associated Transport trailer became a part of the "Great White Way" and served as a psycho-physical testing clinic where several thousand men and women checked voluntarily on their own driving traits. The testing clinic was operated jointly by the Greater New York Safety Council and Associated Transport Co. A part of the safety and public relations program of America's largest trucking company, the trailer served to highlight the story of the American truck drivers' championship performance on the highway.

Working full time to help the American public enjoy greater safety, Associated believes that if the trucking industry is to grow and prosper, public good will is a "must." To do this job right, an active and comprehensive public relations program, both in and out of the company, is being continuously carried out through organized campaigns, periodic contests, publicity and awards.

Their most important problem is to keep the driver vitally interested in safety, which is done by continuously run incentive programs called the Safe Driver Award Program.

These safe driver awards have come to be highly prized by drivers. They serve as a valuable stimulus to and as a valuable recognition of accident-free driving. Even veteran safety award winners try to pitch their goals higher. These awards were designed to give recognition for safe vehicle operations. It works like this:

A pin type 10K gold emblem accompanied by a billfold certificate is given. The following distinctions are made in emblems to denote various years of safe driving: For one year—No stone; 2 years—Pearl; 3 years—Ruby; 4 years—Sapphire;

5–14 years—8 pt. diamond; 15–19 years—7 pt. diamond; 20–24 years—2–5 pt. diamonds; 25–29 years—2–7 pt. diamonds.

Expert Driver Award

The company honors those drivers who accumulate outstanding records and deserve to be recognized as "EXPERT," with special, worthwhile awards and a suitable engraved metal pocket certificate. The following desirable awards are distributed in this program of special recognition for consecutive years of expert driving: For 5 years—Wrist watch; 10 years—Ring; 15 years—Pocket watch; 20 years—$100 Savings Bond; 25 years—As this is the "Silver Anniversary" of Safe Driving for the "honored driver," the award is an 8 place setting of Sterling Silverware, suitably engraved. This award is of the highest quality, and is symbolic of a splendid and unique achievement.

Watches and Special Awards are appropriately engraved to indicate nature of Award. Ring designs indicate "10 years Perfect Record" and bear the driver's initials.

Wives play a big part in getting drivers to "think safety." Campaigns are carried into the homes of these drivers with a magazine called "Family Pride," which enlists the help of the distaff side of the family in a safety program. She is urged to take active interest in her husband's driving record. She is also presented with a kit dedicated to the "Woman Behind the Champion Behind the Wheel."

Some of the rules governing the eligibility of drivers for the Safe Driver Award are:

1. Eligibility is confined to those employees whose principal job is driving a company vehicle and whose job classification is driver or switcher.

2. Awards are presented for 12 monthly periods of operations without a chargeable accident. The governing factor is whether or not the accident could have been prevented by the Associated Transport driver and not necessarily who was at fault, or legally responsible.

To determine chargeability of accidents, many factors are considered. Accidents are broken down in various categories, which include: 1. Backing accidents, 2. Collision with the vehicle ahead, 3. Associated's vehicle struck in rear by another, 4. Accidents while passing or being passed, 5. Accidents when other drivers enter the main road from driveway, alley or side street, 6. Weaving left or right, 7. Squeeze plays and shutouts, 8. Accidents in pulling away from the curb or other parking places, 9. Accidents when entering traffic from a driveway, alley or side street, 10. Collision with vehicles from opposite direction, 11. Pedestrian accidents, 12. Non-collision and collision with fixed objects, 13. Skidding accidents, 14. Accidents due to poor visibility, 15. Accidents due to faulty brakes, 16. Mechanical failure, 17. Yard and terminal accidents, 18. Unreported accidents.

Many Associated Transport drivers present suggestions that are used to improve the Company's accident record. This assistance is valued very highly. In order to give

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See demonstration of Wilkins Products, Booth No. 57, Greater New York Safety Council Show
(For details, use Key # O-22 on card on page 71)

(Use Key # O-23 on Inquiry Card on page 71)

drivers' recommendations prompt and proper attention, there is at each terminal a "Terminal Safety Committee." The driver, through his representative on this committee, has a means to secure action on recommendations and suggestions for methods of making his job safer.

"Accident Chargeability"

Whenever an Associated driver is involved in an accident, that accident, in accordance with regulations must be classified as to its chargeability or non-chargeability. Where an accident is judged to be chargeable, the driver involved receives a letter from the Director of the Accident Prevention Department, telling him of this classification.

This method of notification by letter, introduced in 1953, reduces the length of time it previously took a driver to learn about the classification of his accident. It also aids a driver who may feel that the accident in question was incorrectly classified. This request must be submitted in writing within 30 days after the driver receives the original accident-chargeability letter.

The driver, who has requested this review, is notified, in writing by the Director, of the action taken on the particular accident. The decision of the Director as to chargeability is final in regard to Safe Driving and Expert Driving Awards.

To keep the Associated Transport driver alert, the Company issues a number of helpful and interesting publications from time to time on pertinent safety subjects. Rule books and other special notifications keep the Associated Transport driver up-to-date.

Company magazines and manuals, psychological testing clinics, special contests, fire prevention program, and technical safety meetings, are just part of the very comprehensive and successful program at Associated Transport. They always remember—the best way is the courteous way because the courteous way is the safe way, and their drivers generate public good will—the life blood of any business.

• • •

Rocky Mountain Arsenal completed one million man hours of operation last November without a disabling injury. A congratulatory message from Brigadier General Marshall Stubbs, Commanding General, Chemical Corps Materiel Command attested to this fact. This accomplishment is particularly interesting when consideration is given to the unusually hazardous nature of some of the products of the arsenal.

Of the seven temporarily disabling injuries which have occurred at Rocky Mountain Arsenal this year, prior to the record period, all have been from common industrial causes, the type that any production plant might expect. The toxic, incendiary and explosives munitions handled at the Arsenal have not contributed to the cause of any of the temporarily disabling injuries this year.

• • •

The Northern California Industrial Safety Society has awarded annual "Safety Oscars" to the men in the San Francisco Bay Area who have contributed the most to safety. The awarding of Safety Oscars was begun by the NCISS in 1953 and has continued on a yearly basis.

Those receiving the award for 1955 were: Mr. O. A. Jeschien, Safety Chairman, Berkeley Kiwanis Club, Berkeley; Mr. E. W. Bullard, President, E. D. Bullard Company, San Francisco; Mr. James Grady, Radio Station KCBS, San Francisco; Mr. Dave Allan, Westinghouse Television Station KPIX, San Francisco.

Mr. Jeschien received his award for outstanding safety programs carried on by the Berkeley Kiwanis Club for Child safety. Mr. E. W. Bullard received his award for the contribution to the Industrial Safety Industry, James Grady for his promotion of Child safety prior to the opening weeks of school and "Deputy Dave" Allan for his promotion of a Child Safety Club.

• • •

Rheem Manufacturing Company's Burlington, N. J., ordnance plant received an award for one

million man hours without a lost-time accident from the New Jersey State Safety Council. The award was presented by George G. Traver, Executive Vice President of the Council to Charles W. Cochran, manager of the Burlington plant.

Paul O. Halpecka, Rheem employee, won a 1956 car in a drawing. The car was given by Rheem as an incentive to safety among its employees.

• • •

Postmaster General Arthur E. Summerfield recently presented to a Post Office Department driver the 750 thousandth Safe Driver Award of the National Safety Council. The recipient of the award, Thomas H. Vanderhoof, Sr., of the Dover, N. J., Post Office had a flawless record of 13 years of safe driving. He is one of the 100 thousand postal drivers enrolled in the Safe Driver Award Program.

• • •

A million man hours worked without an accident in their Towson plant has won The Black & Decker Mfg. Company an Award of Merit given by the company's insurance carrier. The plant operated without a disabling injury for 1,233,422 man hours March 4, 1955 to August 17, 1955.

• • •

Two men prominent in insurance and safety fields have been honored by the American Standards Association for "leadership in advancing the development and use of voluntary standards as instruments of free enterprise."

Arthur S. Johnson, vice president, American Mutual Liability Insurance Company, Boston, and G. L. Kerr, vice president, American Fore Insurance Group, New York, were presented awards at a meeting of the association's Board of Directors. Presentation of the scrolls was made by James L. Cranwell, president of the association, and vice president, Pennsylvania Railroad Company, New York.

• • •

(For details, see Key # O-24 on card on page 71)

Engineering Conference At Ohio State University

The College of Engineering at The Ohio State University announces its Annual Conference for Engineers (ACE) to be held in Columbus at the Ohio Union on May 4, 1956. This is an event of interest to practicing engineers in industry, business and public life. Discussions and conferences concerning significant new developments and concepts in the various fields of engineering will be presented by staff members of The College of Engineering and selected industrial personnel. Program announcements will be released shortly.

The 1956 Conference is expected to surpass the record of last year's event which attracted more than 800 engineers from twenty-one states. Inquiries and reservations should be addressed to:—Harold A. Bolz, Associate Dean, College of Engineering, The Ohio State University, Columbus 10, Ohio.

inside the trade

PITTSBURGH PLATE GLASS CO. has announced new appointments to various positions of several divisions. *Joseph C. Thompson, Jr.*, has taken over the newly-created position of general manager—trade sales finishes of the paint and brush division. Prior to his appointment he had served since 1952 as general paint manager for the merchandising division.

Guy J. Berghoff, who had served as assistant to the vice president of the merchandising division since 1954, has been appointed as general manager of paint sales for the merchandising division.

Election of *Ralph V. Reisgen* as vice president in charge of glass manufacturing has been announced by David G. Hill, president. In this position Mr. Reisgen succeeds Mr. Hill who was elected president of the company on December 14.

Appointment of *Paul A. Ketchum* as manager of safety glass sales has also been announced. In his new capacity Mr. Ketchum succeeds William J. Miller who has resigned recently. Prior to his appointment, Mr. Ketchum had served as assistant to the president during the past year.

Marvin W. Marshall has been appointed director of automotive sales. He will be responsible for glass sales to the major automotive accounts and report directly to the president.

An aid-to-education program totaling $462,000 has been approved by the Pittsburgh Plate Glass Foundation. The program features financial aid to outstanding high school graduates and direct financial aid to privately endowed colleges and universities during the next four years. According to Harry B. Higgins, president of the foundation, the largest single grant, totaling $150,000, is for ten scholarships per year at $1,500 each to be awarded through the National Merit Scholarship Corporation.

The merger of three of the country's oldest and best known manufacturers of rainwear and protective clothing, widely used in the chemical, rubber, steel and many other industries—the *H. M. SAWYER & SON CO.* of Cambridge and Watertown, Mass., the *J. F. CARTER CO.* of Beverly, and the *A. J. TOWER CO.* of Boston—has been announced by *Charles L. Foote*, President of the Sawyer Company. The new organization to be known as *SAWYER-TOWER, INC.* combines three firms each more than 115 years old.

Foote remarked that the protective clothing field was expanding rapidly as industry became more and more conscious that the need for worker protection must keep abreast of other technological improvements.

The merger will increase efficiency in research, development, production, marketing and distribution. Each company will operate as an independent division of the parent organization.

Solomon R. Baker, chairman of the board and president of *PYRENE MANUFACTURING CO.* and its wholly-owned subsidiary, *C-O-TWO FIRE EQUIPMENT CO.*, announced a merger of the two companies and the adoption of a new name, *PYRENE—C-O-TWO CORPORATION*, effective December 30, 1955. This corporate merger has been preceded by unification of research, engineering, manufacturing, sales and most administrative functions over the past year. The company's general offices and main plant are in Newark and other plants and offices are in Chicago and Los Angeles. Additional sales and engineering offices

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(For details, use Key # O-25 on card on page 71)

are in Atlanta and Dallas. The names and existence of other wholly-owned subsidiaries are not affected by the merger. Domestic subsidiaries are Pyrene Metal Finishers, Inc., and Chemical Concentrates Corporation. C-O-Two Fire Equipment of Canada, Ltd., is the only foreign subsidiary.

ALBI MANUFACTURING CO., INC., announces that *Bernard J. Tyler*, Director of Sales, has been named Vice-President. The appointment initiates an expansion program for the company's sales division in line with the broader distribution of Albi's fire-retardant paints throughout the United States.

FALCON ALARM CO., INC., has elected *Charles P. Sagar* as a vice president, according to an announcement by *C. E. Graham Reeves*, president of the safety equipment manufacturing firm.

The company has also reported that its self-powered fire detectors and signal horns have been approved for installation in New York State industrial plants and retail stores by the State Department of Labor's Board of Standards and Appeals.

Recently installed at a meeting of the Society of Industrial Packaging and Materials Handling Engineers, a national professional group, are Board Chairman Earl B. Candell, General Electric Company, Cleveland, Ohio; President, John W. McReynolds, Kraft Foods Company, Chicago, Illinois; Executive Vice President, John Mount, Insurance Company of North America, Philadelphia, Pennsylvania; Vice President, A. O. Manger, Rathborne, Hair & Ridgway Box Company, Philadelphia, Pennsylvania; Vice President, E. P. Troeger, Douglas Aircraft Company, Inc., Los Angeles, California; W. L. Utley, Towmotor Corporation, Cleveland, Ohio; Treasurer, M. C. Weisenhorn, Jiffy Manufacturing Company, Chicago, Illinois; Secretary, R. C. Cragg, Gould-National Batteries, Inc., Chicago, Illinois.

H. Thomas Hallowell, Jr., president, Standard Pressed Steel Company, Jenkintown, Pa., has been elected president of the American Standards Association, the directors of the Association have announced. He took office on January 1 for a one-year term.

Van H. Leichliter, vice president of operations of American Steel and Wire Division of United States Steel Corporation, Cleveland, was elected vice president of the Association.

(For details, use Key # O-26 on card on page 71)

W. G. Frank, formerly Executive Vice President, has been named President of the *AMERICAN AIR FILTER CO.*, and *W. M. Reed* has been elevated from President to the newly created post of Chairman of the Board.

METAL & THERMIT CORP. has named *Charles M. Dick, Jr.* to direct its nation-wide staff of sales engineers handling the new Kel-Ray projectors for industrial radiography with gamma rays from radioactive isotopes. Prior to taking his new post, Mr. Dick served as Welding Engineer at Todd Shipyards, Houston, Texas.

WALTER KIDDE & CO. OF CANADA LTD. has completed its move into new quarters at 5500 Royalmount Avenue, Town of Mount Royal, Montreal 9. The one story building is of modern construction and comprises 20,000 square

feet of floor area. Only a few minutes drive from downtown Montreal, the structure is in a section of the city which rapidly is developing into an industrial area.

JOMAC INC., manufacturers of industrial gloves has named *Michael A. Miller* as sales representative in the Chicago area. He was formerly assistant regional service manager for the Worthington Corporation, of Chicago.

In order to meet the demands of an increasing industrial lift truck population in upper New York State industry, *THE YALE & TOWNE MFG. CO.* has announced the establishment of two new representative sales and service outlets. The Syracuse territory will be handled by Materials Handling Product Corp. located at Industrial Park Area, Wavel Street, P. O. Box 246, Eastwood Station in Syracuse. It is under the direction of Robert Minich and Daniel Mac-Beth.

Yale sales and service in Schenectady and Albany will be in charge of The Schenectady Materials Handling Company under the direction of John Chalmers. This outlet is located at 2022 Central Avenue, Albany, with a mailing address of Box 605 in Schenectady.

The appointment of *Allan A. Watson* as Manager-Assemblies and Components Sales was announced by Mr. Hershner Cross, General Manager of *GENERAL ELECTRIC'S* Distribution Assemblies Department. Assemblies & Components Sales, as a selling organization, represents both the Distribution Assemblies and Trumbull Components Departments of General Electric.

Safety Appointments

The appointment of *Lewis W. Greiner* to manager of safety of the Explosives Department of *HERCULES POWDER COMPANY* has been announced by the company. Mr. Greiner succeeds John T. Moore, who retired December 31, 1955.

As manager of safety, Mr. Greiner is responsible for safety and fire protection in operations at Hercules explosives plants and ordnance plants operated for the U. S. Government, and in explosives sales, and sales service, and a consultant on safety in the storage and transportation of explosives. His work also covers the engineering of safety in explosives equipment for the manufacture (and transportation) of explosives.

Mr. Greiner has been assistant manager of safety for the Explosives Department since his transfer to the Home Office in Wilmington, Delaware, in October, 1953. A graduate of the University of Michigan, B.S. degree in chemistry, Mr. Greiner left graduate school to become a chemist at the Hercules Experiment Station near Wilmington, in 1937. He was assigned shortly afterward to dynamite research at the Kenvil, New Jersey, plant. In turn, he worked at the Carthage, Missouri, and Hercules, California, explosives plants, before returning to the Bessemer plant as acid supervisor. He was appointed assistant works manager there in 1942.

Mr. Greiner is a member of the American Chemical Society, University of Michigan Alumni Society, Theta Chi social fraternity, and the Hercules Club of Wilmington and Hercules Country Club.

John T. Moore, who retired as safety manager, is recognized as one of the outstanding safety engineers in industry.

A veteran of 40 years of service, Mr. Moore became associated with Hercules as a chemist at the Kenvil, New Jersey, plant. With a background of experience in the manufacture and handling of explosives, he became an authority on explosives safety engineering, including the fields of smokeless and black powders and high explosives.

Frank A. Gerard has been named Safety Manager of *Olin Mathieson Chemical Corporation*. Announcement of his appointment was made by J. E. Gagnon, Director of Personnel. Gerard, who has been supervisor of Employee Services at the East Elton plants, will be located in the company's New York offices.

Gerard has spent most of his career in safety promotion work and has held safety positions with several large corporations. He joined Olin Industries, Inc. in 1942.

He is a member of the Metals Section of the National Safety Council, Vice President of the St. Louis Chapter of the American Society of Safety Engineers and Vice President of the Madison County Safety Council. He was recently appointed by Governor Stratton of Illinois to serve as a member of the Safety Education Commission in the Division of Safety Inspection and Education in the Department of Labor.

Edited by HENRY M. GROSMAN
Counselor at Law, Newark, N. J.

MEMBER . . . . . .
Master Superior Court, New Jersey
American Bar Ass'n, New Jersey Bar Ass'n,
Chairman, Committee on Workmen's
Compensation, New Jersey Bar Ass'n
National Federation Insurance Counsel
Past Commander, American Legion, Post 10,
. . . . . Newark, N. J.

COVERAGE BY ACT—"Workshop" Hazardous Employment

The dependent wife of a deceased county employee was properly awarded death benefits for the death of her husband. He lost his life in an accident which occurred in a county garage and arose out of and in the course of hazardous employment. The evidence disclosed that the garage was equipped with an electric welder, a drill press, a grinder, buffer and a trip hammer to beat out metal. The court ruled that employment in the garage under the facts presented was employment in a "workshop" under the provisions of the statute regarding hazardous employment.

BOARD OF COUNTY COMMISSIONERS OF TULSA COUNTY, OKLAHOMA VS. HORNE, Oklahoma Supreme Court, No. 36,357, Oct. 4, 1955.

BACK INJURY—Conflicting Medical Evidence

A foundry employee was awarded compensation for back injuries sustained while carrying heavy moulds. The lower court properly found that the constant carrying of the moulds, resulting in the injury to his back, constituted an accidental injury. The medical evidence was conflicting. The employer contended that no accident occurred because the disabling pain was experienced while the claimant was doing his usual work. The court ruled that it was not essential that the exertion producing the disability be out of line with ordinary duties of the job in order that the injury be compensable. The court further ruled that the herniated disc resulted from repeated stress and strain caused by the claimant's work. The fact that the pains appeared after claimant had set the mould on the floor was not inconsistent with a causal relationship between the work and the injury.

WISCONSIN APPLETON CO. VS. INDUSTRIAL COMMISSION, Wisconsin Supreme Court, No. 147, April 5, 1955.

CEREBRAL HEMORRHAGE—Failure to Prove Accidental Injury

The dependent wife and child of a deceased truck driver were properly denied death benefits for his death where they failed to prove that the decedent died as the result of an industrial injury. On the day that the decedent experienced the severe pain in his head, he had done nothing which might be considered strenuous. The court ruled that his death by reason of a cerebral hemorrhage could not be traced to his employment. The autopsy showed that he had a congenital aneurysm which might have burst at any time. The court further ruled that before a claim may be allowed the accident to the employee must have arisen out of the employment.

NEFF VS. HENRY WAGNER TRANSPORT CO., Kansas Supreme Court, No. 39,713, April 9, 1955.

SILICOSIS—Total Permanent Disability—Sufficiency of Evidence

An employee who contracted silicosis during his employment in the "pot and clay" department and thereafter was given other employment in the same plant was properly awarded compensation for total permanent disability. There was sufficient evidence to show that the employee was exposed to dust during his entire employment. It is also undisputed that the employee contracted the disease in the same employment and with the same employer by whom he was employed at the time he was disabled. The employee had contracted silicosis prior to 1934 and thereafter he was moved to another department; and he became totally and permanently disabled on October 1, 1950. The court concluded that the evidence was sufficient that the claimant had been exposed to dust within two years of his disablement.

MINCHIE VS. CORNING GLASS WORKS, New York Supreme Court, Appellate Division, Third Judicial Department, No. 74-14, April 1, 1955.

WHAT HAPPENS NEXT?

If management has been wise, a fire tragedy will be stopped before it starts... if not, in 20 minutes extensive destruction and total loss could readily be the result.

First-rate fire protection is essential to the continued success of any business. With C-O-TWO Smoke or Heat Fire Detecting Systems, plus C-O-TWO High Pressure or Low Pressure Carbon Dioxide Type Fire Extinguishing Systems, as well as PYRENE Air Foam Type Fire Extinguishing Systems for specific outdoor locations, your plant can have fast, positive round-the-clock fire watchman service simultaneously at each fire hazard point . . . a fire tragedy is stopped before it starts.

Furthermore, there is a personal sense of responsibility inherent with PYRENE—C-O-TWO Fire Protection Engineers that assures you of fully adequate firesafety . . . a definite plus in your behalf. Whether it's fire detecting or fire extinguishing . . . portables or built-in systems . . . PYRENE—C-O-TWO means top quality backed by experienced engineering that results in operating superiority for you at all times.

Act now . . . don't take unnecessary chances with your investment any longer . . . the extensive experience of PYRENE—C-O-TWO over the years is at your disposal without obligation. Remember . . . a plant-wide fire protection survey skillfully executed today could be the means for greater profits tomorrow.

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COMPLETE FIRE PROTECTION

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(For details, use Key # O-27 on card on page 71)

THE FIRE FRONT

Fires in Insecticides

Two recent fires involving a particularly toxic group of insecticidal chemicals, the organic phosphates, have caused concern among fire fighting authorities, according to a recent bulletin of the National Board of Fire Underwriters. Contact with these chemicals either through dust and vapor inhalation or skin exposure is reported to be very hazardous. In these fires a medical examination was required for 68 firemen, several of whom were affected sufficiently to require hospitalization. Decontamination procedures required the burying of all objects exposed to the chemical and the burning of many articles of clothing used by the firemen.

The organic phosphates are one of the newer groups of insecticides that resulted from research work on war gases during World War II. They are used widely as agricultural chemicals and consequently are found in fairly large quantities in warehouses, sales outlets for fertilizer and farm chemicals, and at the facilities of pest control operators. They have even been stored at airports in preparation for spraying from airplanes. In the "highly toxic" group which are being considered, parathion (O, O-Diethyl O-p-nitrophenyl thiophosphate) is the most widely used. Other organic phosphates in this class are TEPP (tetraethyl phosphate), HETP (hexaethyl tetraphosphate), EPN (O-Ethyl O-p-nitrophenylbenzene thiophosphonate), and OMPA (Octamethyl pyrophosphoramide). Some organic phosphates are of the intermediate and low toxicity groups and are not being considered here. The chemicals are handled in several forms. There are liquid concentrates, solvent dilutions and wettable powders. The concentrate is mixed with an inert clay dust and with xylene solvents for crop application in a concentration of about 2 percent.

Description of Fires

The fire department of a West Coast municipality received an alarm of a fire at the warehouse of a local distributor of insecticidal products. The fire had progressed considerably by the time the firemen arrived. The men were ordered to protect nearby properties before attempting to extinguish the fire in the warehouse (wood and metal construction—120 x 180 ft.).

The warehouse had been inspected prior to the fire and it was determined that very toxic insecticides were stored in the building. On the night of the fire the warehouse contained many types of insecticidal chemicals in various parts of the building. This included about 4 tons of 50 percent parathion powder in paper bags, ¾ of a ton of 25 percent parathion powder in paper bags, two 30-gallon drums of parathion-xylene mixture, and 6 gallons of TEPP.

When the other fire exposures were adequately protected the firemen attempted to extinguish the warehouse fire. During this operation many entered the building and a number of these people wore gas masks at least part of the time. No special precautions were undertaken by the firemen to protect themselves from skin contact with the organic phosphate insecticides.

The first symptoms of parathion poisoning were not noticed until the firemen had returned to quarters. Some of the men complained of nausea, headaches, tightness of the chest and coughing. About 55 people including firemen, policemen, and power and telephone crews were treated for possible parathion poisoning with intravenous injections of atropine. Four of the firemen remained in the hospital for several days for additional treatment. Alcohol baths were given to all men exposed to the poison when they reported to the hospital.

In the second fire two large buildings of a fertilizer and chemical company were destroyed by a fire started by lightning. This fire occurred in a large municipality in the southern part of the country. Thirty-three of the firemen who worked at this fire were suspected of being exposed to parathion and three were diagnosed as having been poisoned by this chemical. The two buildings were destroyed with a loss of approximately $500,000.

The buildings consisted of a ware house (70 x 240 ft.) and a manufacturing plant (100 x 150 ft.) both of sheet metal and wood frame construction. The warehouse contained many chemicals and finished citrus insecticides including parathion, sulphur, borax, arsenate of lead, and emulsifying agents. It was reported that the warehouse contained 85,000 pounds of para-

(Continued on page 61)

November Losses Rise

Estimated fire losses in the United States during November amounted to $68,784,000, the National Board of Fire Underwriters has reported. This loss represents an increase of 11.5 percent over losses of $61,663,000 reported for November, 1954, and an increase of 17 percent over losses of $58,778,000 for last October (1955).

Losses for the first 11 months of 1955 now total $796,006,000, an increase of 1.1 percent over the first 11 months of 1954, when they amounted to $787,103,000. These estimated losses include an allowance for uninsured and unreported losses.

Spray Sprinklers:

in ceiling protection

quicker cooling

superior control

less water used

Despite the fact that the new spray sprinkler rules have only been in effect in comparatively recent months, there is still a tremendous interest in the development of this device. The new spray sprinkler represents about the only serious change made in the automatic application of water during the past 50 years. This might seem to indicate that there had been no real progress in the automatic sprinkler industry, but over a 50-year period, the performance record of automatic sprinklers in extinguishing or controlling fires was 96.1 percent.

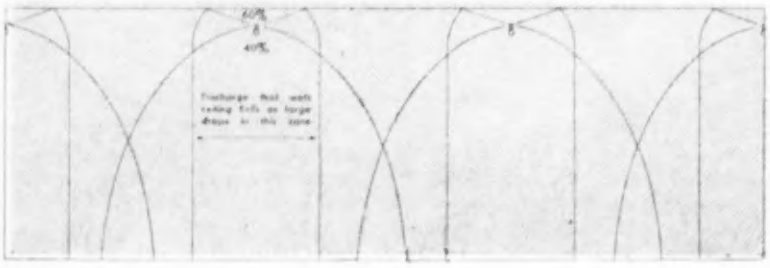
It is always well to remember, too, that in that 3.9 percent of failure or non-control, are such things as closed gate valves; water shut off too early to complete extinguishment; clogged piping and other things that in reality left an occupancy unprotected. In addition to this, poor maintenance and poor inspection contributed to the record.

Spray sprinklers or, rather, **spray**, is certainly not new but in the past it was confined to special sprinklers and special application and no thought had been given, over the years, to breaking up the water, automatically, for all types of extinguishment. It may be of interest to know how this spray development started. A certain company proposed to pile tires on wooden pallets, each pallet to be about 5 ft. high and then stacked either three or four pallets high. Because of the serious combination of extra-high piling as well as fear of the effect of the pallets themselves on sprinkler distribution, this problem was brought to the attention of the Factory Mutual Laboratories. The Laboratories very soon found that tires, piled on each other on the floor to heights of only six to eight feet, would result in a fire hazard beyond the capabilities of many ordinary sprinkler systems. Therefore, most of the original tests were conducted on rubber tire storage with high piled tires. The tires not only presented a fire hazard of tremendous proportions but they also represented a type of fire that could be duplicated time and again so that tests could be checked and rechecked.

In addition to the tire tests, a standard test crib was built of 6×4's; 4×4's and 2×4's. Under these cribs, there was a steady feed of gasoline and this test, too, could be duplicated time and again. In all the early tests, the sprinklers were installed in pendent position. This made it more-or-less a directed-discharge sprinkler and in many ways it paralleled the standard spray nozzle of wide angle except with the marked

This spray sprinkler picture affords a good idea of the thorough diffusion that is possible. This means quicker cooling.

Graph below indicates action of regular type sprinklers, and why they prove less speedily effective than the spray variety.



by **T. SEDDON DUKE**
Star Sprinkler Corporation

As shown here, this type of sprinkler provides an arched spray which offers maximum protection, but cuts wet ceiling damage and quantity of water used.

Better Defense

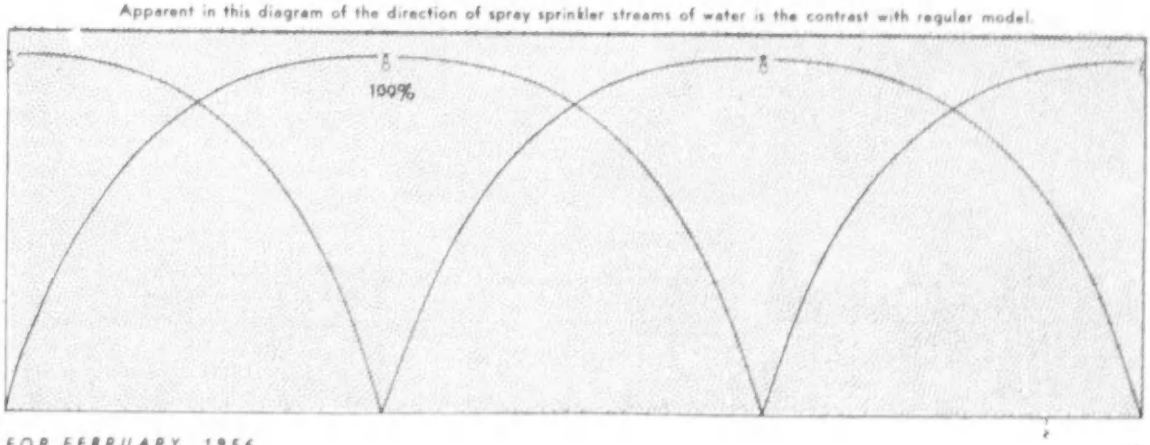
difference that the spray sprinkler was a truly automatic sprinkler, operating within itself instead of being a part of the sprinkler system, thermostatically-operated, although it can well be used and is used with the operating mechanism removed.

After the tests referred to were well under way, it was appreciated that if spray sprinklers installed in the pendent position could be so effective in extinguishment, then there was no reason that there should not be spray sprinklers of upright design. This, of course, was a desirable development since the sprinklers in pendent position could not be used on dry systems, nor could they be used in present installations since the cost of changing piping would have been excessive.

It was apparent, in even the earliest tests, that the break-up of the water was of great importance and that there would be less water used due to the break-up of the water into a **finer** spray. At this point, it should be realized that the spray sprinkler represented a radical change and all of our thinking had to be revised. Since 1882, all automatic sprinklers had been designed to discharge approximately 60 percent of the water from each sprinkler directly against the ceiling above the sprinkler. It was felt that direct ceiling-wetting was necessary and that excess water directed to the ceiling would fall back into the fire. However, we know such water falls in the form of small streams or large drops and is relatively inefficient in its capacity to cool the atmosphere.

We recognize and realize that it is essential to cool the products of combustion above the fire—especially under the ceiling and around other structural elements—so as to reduce the exposure temperature. The extent of break-up

Apparent in this diagram of the direction of spray sprinkler streams of water is the contrast with regular model.



of the water distribution is of great importance and the tests have evidenced that, with the new automatic spray sprinkler, the cooling is so effective that combustion at the ceiling will not be supported.

In the fire tests, the new spray sprinkler clearly demonstrated greater efficiency in the control and extinguishment of fires, particularly severe fires under adverse conditions of piling; less damage from the water discharged from the sprinklers and less damage from fire to contents of the occupancy. In many tests, it has been shown that fewer spray heads than regular heads will operate in a given fire with equal water pressures, with equal water discharged per head and with up to a 30 percent increase in spacing.

Fire tests in the Laboratories, involving Class A material resulted in the consumption of less material when spray sprinklers were used than was consumed in fires extinguished by the standard or conventional sprinklers. It is therefore evident that if extinguishment can be accomplished, using less water and with lower material loss, a significant improvement in fire protection is presented to industry. This, in turn, should have a beneficial effect on the efficiency and general performance record of automatic sprinkler systems.

In these fire tests, there were remarkable results on the crib fires with the gasoline feed and even at extremely low water pressures. For instance, the sprinklers were spaced 10×10 and the position of the test fire was centered on 4 sprinklers. The gasoline flow was 0.73 gallons per minute. The water supply in the case of the standard sprinkler was 5 lbs. pressure. In this test with the standard sprinklers, 17.6 sprinklers opened. The total gallonage flow was 225 g.p.m. The loss of weight in the wood crib was 169 lbs. or 55 percent of the total and the maximum temperature maintained for a 5 minute period was 1023 degrees.

Under similar test conditions on the upright spray sprinkler, the gallonage flow of the gasoline was the same, 0.73 g.p.m. The water pressure was 2.8. The gallons per minute of water were 9.6. The number of spray sprinklers that opened was 7. The total flow in gallons per minute was 67.2. The loss of weight in the wood crib was 17 lbs. or a percentage of 4.6 percent and the maximum temperature maintained for a five minute period was 375 degrees.

High Pressure Tests

At 15 lbs. pressure, the comparison was equally as good as in the extremely low pressures. However, let's look at one of the higher pressure tests. This was a Class A fire, also with the wood crib and gasoline-fed fire. The spacing was 10×10 and was centered on 4 sprinklers. The gasoline flow was increased in the case of the standard (or conventional) sprinkler to 1.31 g.p.m. The water supply pressure was 31.5 and the g.p.m. was 32. The number of sprinklers operating was 9.75. The total water flow was 312 g.p.m. The loss in the wood crib was 154 lbs. or 51 percent. The maximum temperature maintained for a 5-minute period was 1240 degrees.

In the case of the upright spray sprinkler, tested under these same conditions, with the gasoline flow the same, the water pressure was 17.8. The g.p.m. flow was 24 gallons. The number of sprinklers operating was 9. The total flow of g.p.m. 216. The loss of weight in the wood crib was 24 lbs. or 7.8 percent and the maximum temperature maintained for a 5-minute period was 380 degrees.

Shows Effectiveness

This not only indicates the tremendous extinguishment effect of the new spray sprinkler but also the tremendous cooling effect of the spray.

There was some concern evidenced earlier about the effect of ceiling fires on the new spray sprinklers. Tests have dissolved any doubt of the effectiveness of the spray sprinkler in such fires despite the fact that all of the water is directed toward the fire on the floor.

Some people wonder why the word "fog" was not applied to the spray sprinkler since it seemed as if some fog was present par-

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(For details, use Key # O-28 on card on page 71)

ticularly in the operation at higher pressures. The word "fog" is somewhat a misnomer. If it were possible to break water up into droplets as fine as the droplets in fog, they would have about as much effect as nature's own fog in extinguishing a brisk fire. Fog, as nature makes it, is certainly too fine to penetrate into the zone where oil vapors are too rich to burn but are carried away by the thermal currents from the fire. In nature's fog, there is also plenty of air present to supply oxygen for continued combustion.

Put Out Kerosene Fires

Another question often asked concerns the possibility of the complete extinguishment of gasoline fires. Already, serious kerosene fires on the floor have been extinguished by the new spray sprinklers. These sprinklers were 10 ft. on centers and while it took 50 lbs. water pressure to do the job, it was still done very effectively. Under the same fire conditions, it would take 40 lbs. pressure with the spray nozzles, of the wide-angle variety, on 8-ft. centers. The question of gasoline is something else again. While the tests have definitely proved that the new spray sprinkler is more effective in protecting building and occupancy against the exposure of a gasoline fire, we have not yet reached the point where we can expect complete extinguishment. Further tests may show that such extinguishment of gasoline fires may not even be desirable because of the danger of the subsequent explosion of gasoline vapors with air. It may continue to be preferable to have the sprinklers control the fire so that extinguishment of a gasoline fire can be completed with first-aid equipment.

Demonstrated Superiority

The new spray sprinklers have demonstrated marked superiority in four important phases: (1) Better ceiling protection (2) Much greater and more immediate cooling of fire temperatures (3) More effective control and extinguishment of fires and (4) Reduced water consumption.

Pictures by courtesy of Star Sprinkler Corp.

(For details, use Key # O-29 on card on page 71)

The Fire Front

(from page 57)

thion both in the technical grade 99½ percent pure and the wettable powder which contains 15 percent of this insecticide.

When the fire had reached its peak a large pile of burning sulphur harried the firemen and forced spectators away. These fumes could be detected two blocks away. Nearby residents were advised to leave their homes but they returned when the fire subsided. No extraordinary precautions were taken to avoid skin contact of the firemen with the parathion. Some firemen were even wading in parathion-laden water with low cut shoes.

Removal of the parathion and other toxic chemicals from the fire area proceeded for several days after the fire. Most of the material was buried with lime to insure decontamination of the area. All clothing worn by firemen who had been exposed was burned for the same reason.

Every precaution should be taken to prevent fire department personnel from directly contacting the organic phosphates during a fire. These very toxic chemicals can be absorbed through the skin, mouth, and mucus membranes. Parathion is only slightly irritating on contact and gives very little immediate warning. Firemen should be careful when exposed to these chemicals under fire conditions. Rubber gloves, goggles, and a universal gas mask equipped with a toxic dust filter, or self-contained breathing apparatus, should be used. Warnings should be given to firemen and any other people who may be exposed to such toxic materials, that they avoid eating, drinking, or smoking anywhere near the fire area or before thoroughly cleansing themselves and changing their clothing. Following a fire, chemical tests may be necessary to determine the degree of contamination of clothing.

The following preventive measures are suggested to safeguard firemen from exposure to the toxic effects of the organic phosphate insecticides:

1. Organic phosphate insecticidal compounds should be segregated from other chemicals. Isolated outside storage or inside storage in sprinklered, fire-resistive areas with proper drainage and ventilation to the outside atmosphere is recommended.

2. The quantity of organic phosphate in storage should be limited to operating requirements. The storage area should be protected from possible exposure to high temperatures. The area should be free from combustibles or flammable liquid storage.

3. Appropriate warning signs and placards to indicate the location of these insecticidal compounds should be posted. Emergency procedures for fire or removal of spilled chemical as well as first aid measures should be prominently displayed in the proximity of the storage area.

4. Personnel of the company handling the insecticide should receive adequate training and education relative to the hazards of the material, emergency procedures and first aid measures.

5. Cooperative liaison should be established between the local fire authorities and companies handling organic phosphates. Any changes in plant operations or storage procedures should be of mutual interest.

6. The company handling the organic phosphates should delegate responsibility for emergency cooperation to one of their officials who is always available.

7. First aid fire extinguishing equipment should be readily available in the storage area and employees should be trained to operate it.

8. An emergency supply of atropine tablets (1/100 grain each) should be available at the plant medical facilities for first aid treatment.

TYPICAL WARNING PLACARD

(From a Manufacturer's Label) *

PARATHION—25% WETTABLE POWDER

DANGER, POISONOUS BY SKIN CONTACT, INHALATION OR SWALLOWING

Rapidly absorbed through skin—Repeated inhalation or skin contact may, without symptoms, progressively increase susceptibility to parathion poisoning.

DO NOT GET ON SKIN, ON CLOTHING

Wear clean heavy rubber gloves and clean waterproof or freshly laundered protective clothing (coveralls, cap, etc.). Clothing must not get wet through. Destroy and replace gloves frequently.

Wash thoroughly with soap and warm water before eating or smoking. Bathe immediately after work and change all clothing. Wash clothing thoroughly with soap and hot water before re-use.

In case of contact, immediately remove contaminated clothing and wash skin thoroughly with soap and water.

DO NOT BREATHE DUST, VAPOR OR SPRAY MIST

Wear respirator of a type passed by the U. S. Department of Agriculture for parathion protection. Airplane pilots should wear full-face canister-type mask. If handled indoors provide mechanical exhaust ventilation.

DO NOT STORE NEAR FOOD OR FEED PRODUCTS

Bury spillage; clean up area with strong lye solution. Burn or bury containers; never re-use. Remove unprotected persons and domestic animals from operating and adjacent areas where insecticide may drift and vapor dissipate.

POISON

Atropine is an antidote—Consult physician for emergency supply.

FIRST AID TREATMENT

Call a physician at once in all cases of suspected parathion poisoning.

If symptoms or signs of poisoning include (See Physicians' Note) blurred vision, abdominal cramps and tightness in the chest, don't wait for a doctor but give two atropine tablets (each 1/100 gr.) at once.

Remove patient immediately from the area where parathion is present. Remove contaminated clothing and wash the skin clean with plenty of soap and water to remove all traces of parathion. If swallowed, induce vomiting by giving warm salty or soapy water.

Never Give Anything By Mouth To An Unconscious Patient.

Physician's Note: Warning symptoms include weakness, headache, tightness in the chest, blurred vision, non-reactive pin-point pupils, salivation, sweating, nausea, vomiting, diarrhea and abdominal cramps.

Treatment: Give atropine preferably by injection, grains 1/100 two or three tablets at once and parenterally or orally every hour as required up to 30 tablets or until pupils dilate. Never give morphine. Clear chest by postural drainage. Artificial respiration and/or oxygen administration may be necessary. Observe patient continuously 48 hours. Repeated exposure to cholinesterose inhibitors may without warning cause prolonged susceptibility to very small doses of any cholinesterose inhibitor. Allow no further exposure until time for cholinesterose regeneration has been allowed as determined by blood tests.

* American Cyanamid Co., New York, N. Y.

Decontamination

Decontamination of an area where organic phosphates have been spilled is a problem which confronts authorities after a fire. If the spilled material is permitted to await ordinary clean-up and salvage operations, serious poisoning cases may occur. The following procedures have been suggested:

1. All workers should wear protective clothing and gas masks.

2. Debris should be carefully removed and buried with lime. Avoid scattering the chemical either in the form of dust or liquid. Spilled dust may be removed with a vacuum cleaner; clean equipment after use.

3. Liquid spillage should be absorbed in sawdust, soda ash, lime, or clay and the residue buried.

4. The entire area suspected of contamination can be washed with a strong lye solution. Good detergents and sodium carbonate or trisodium phosphate are frequently sufficient to clean up spills after removing parathion with inert material.

5. Empty drums or bags which have held organic phosphates must be carefully removed. The drums can be washed with lye solution and the bags can be burned or buried.

transportation safety

FLASHING FLARE

THE NEW Flashing Flare Beacon, Model No. 108-F, is the latest addition to the "Big Beam" line of electric hand lamps, flares, and automatic emergency lights produced by U-C Lite Manufacturing Company. This new flare features a flashing bulb covered with a red Fresnel lens of durable molded plastic. A simple push-button switch starts and stops the light. It is powered by one standard 6-volt lantern battery housed in a sturdy, waterproof steel case finished in red enamel. Battery replacement can be made in a few seconds as there are no wires to connect. Lamp to battery contact is pressure type. Fresnel lenses are also available in blue, green, amber, and clear.

Designed for emergency use by motorists, sportsmen, truckers, contractors, highway and plant protection, police and fire departments, the flare also has many other uses. A typical application is during an emergency stop of a vehicle in the dark of night. The motorist simply places the flare on top of the car or on the road near the car, to flash a warning signal to other drivers. When not in use, this company unit will fit neatly into the glove compartment of a car, a fishing tackle box or the tool kit of a truck.

(Use Key # TS-23 on Inquiry Card on page 71)

How Do You Look at an Accident?

These problems test your ability to judge accident responsibility based on modern defensive driving techniques. They have been devised by Donald S. Buck, safety director, U. S. Army Transportation Corps. Assume that each report is based on a true accident; that each driver's statement is true and complete as given. Decide in each case whether the driver caused the accident or was victim. Remember that you are not deciding who is at fault.

Case No. 17—Driver's Statement

"It was during the evening rush hour, in town, and I was to pick her up on that corner at five pm, because of the rain. There was no place to park, so I circled the block, two or three times, to kill time. At five I pulled up slowly, in the right lane, to the corner, signaled for a stop, and paused at the sidewalk just long enough to throw open the right door, and let her hop in. This 'eager beaver' in the car behind me, tried to swing around for a right turn, and he caused a real pile-up. If he had just waited 30 seconds, he could have prevented an accident."

Case No. 18—Driver's Statement

"Traffic was heavy, during the morning rush. I was in the passing lane on a 4-lane highway, going barely 20 mph. A bus made a pickup stop, one-half block ahead of me in the right lane, tying up traffic behind it. This 'eager beaver,' who was trapped just behind the bus, stuck his hand out for a left turn, then went ahead and pulled out into my lane. I blew my horn but it was too late. His left front fender caught my right side, about midway. He claims that he looked in his rear view mirror. I was almost past when he hit me."

(Answers on page 68)

Truck Driving School

The final 1956 schedule for the North Carolina State College Truck Driver Training School has been completed, Director Edward W. Ruggles of the college's Extension Division announced.

Twelve, four-week courses are being offered. Two have already started and other classes will begin on the dates: February 27, March 26, April 30, May 28, July 2, July 30, September 3, October 1, October 29, and November 26.

The monthly courses are conducted by the N. C. State College Extension Division under the auspices of the Council of Safety Supervisors of the N. C. Motor Carriers Association.

To date, the school is in its seventh year of continuous operation and has graduated more than 2,000 drivers for the transportation industry.

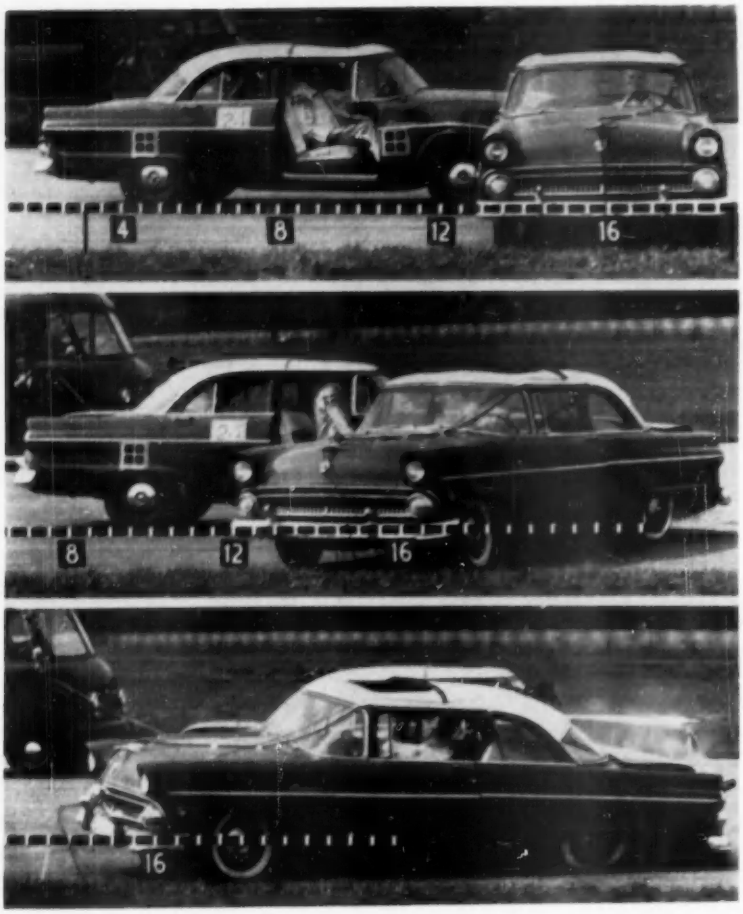
The school's course of study includes classroom lectures, mastery of basic driving skills, road driving, and city driving. Students are graded on their scores on knowledge of facts, driving skills, and attitudes.

Midwest Highway Safety

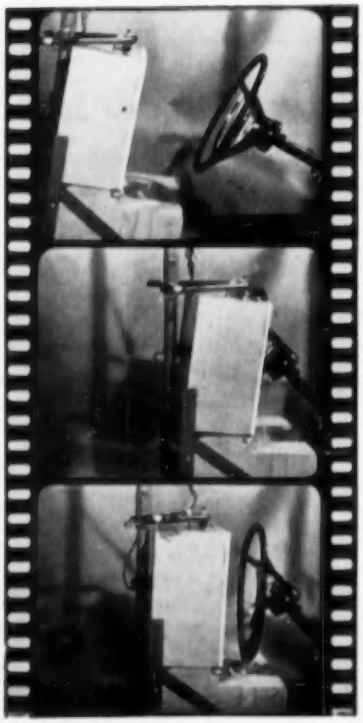
The appointment of Harold Holmes as midwestern regional representative of the Inter-Industry Highway Safety Committee was announced by M. R. Darlington, Jr., managing director. Mr. Holmes will assist state and local dealer highway and safety chairmen, their committees and associations as part of the Committee's field service work. His region will include the states of North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, Missouri, Wisconsin, Illinois, Michigan, Indiana, and Ohio.

Mr. Holmes joins the staff of the Inter-Industry Committee after five years at South Dakota State College, Brookings, South Dakota. He helped establish the college's driver education program and conducted fleet supervisor training courses.

SPEED CRASH—The value of safety door latches, seat belts, energy-absorbing steering wheels, safety mirrors and crash cushioning for the instrument panels and sun visors is shown in sequence photographs of a test crash. The two cars, with their life-like dummy passengers, are shown in the top photo at the instant of impact. In the second photo, the dummy in the crash car's right front seat strikes the padded sun visor while the dummy in the driver's seat hits the deep-center steering wheel, which distributes the force and absorbs the energy of the crash. The dummy in the parked car also is restrained by a seat belt. He momentarily slides over into the seat and then rights himself in the third photo. Although the parked car was struck at a vulnerable spot, all doors remained closed because they were equipped with safety door latches. Research at Cornell University Medical College shows that almost half of highway injuries result from being thrown out of the car during an accident or because passengers strike the steering wheel, the instrument panel, the sun visors or the rear view mirror.



NEW SAFETY CONCEPT—A 167-pound wood block simulating the body of an average automobile driver is shown as it crashes into a safety steering wheel. The second photo shows the wheel as it absorbs the energy of the impact. In the third photo, the block rebounds and shows how the wheel rim protected it from the steering hub. Research at Cornell University Medical College shows almost 40% of all injured drivers are hurt on the steering assembly.



Designing Vehicles for Safety

by **FLETCHER N. PLATT,** Mgr.
Traffic Safety & Highway Improvement
Ford Motor Co.

The rate of deaths on our highways has dropped from 16 per 100 million vehicle miles in 1935 to 6.4 in 1954. These statistics have been quoted scores of times during the past year to demonstrate the effectiveness of a hundred different safety programs. This is not intended as criticism, but it does illustrate the need for new methods of evaluating progress in traffic safety.

Before we can measure progress in traffic safety the problem must be divided into its components and subcomponents. Then each must be analyzed. The four basic interrelated components are: the ve-

hicle, the driver, the highway and traffic control. Let us just consider the vehicle. There are three basic subcomponents of vehicle design relating to safety. The first can be called **crash worthiness**, or designing for the reduction of crash injuries.

Crash Studies

The Cornell Medical College Automotive Crash Research Program has provided the industry with a new yardstick for measuring progress in the reduction of crash injuries. The new models of our own company's cars have introduced new features designed to reduce the number and severity of injuries in accidents, including: safety door latches, an energy absorbing steering wheel, high "G" Seat attachments, safety rearview mirror, padded instrument panel, padded sun visors, and last, but not least important, seat belts. These design features were developed on the basis of information from Cornell and evaluation of our own laboratory studies and over sixty full scale crash tests.

We used several anthropomorphic dummies in these tests with electronic instrumentation to determine time, force, and deceleration. Further information was provided by tests on cadavers at Wayne University Medical School and through consultation with Lt. Colonel John Stapp of the Air Force's Aero Medical Laboratory.

Our management felt it important to provide the means for Cornell to expand its program in order to evaluate these design changes at the earliest possible moment. Others in the industry have also made important changes, and we were pleased that the Chrysler Corporation and Ford could jointly support the Cornell expansion for the benefit of all.

Human Engineering

The second component of vehicle design for safety is **Human Engineering**. This is the art of compatible design of driver controls with dimensions and abilities of human beings. Dr. Ross MacFarland, Associate Professor of Harvard School of Public Health and chairman of the Commission on Accidental Trauma of the Armed Services Epidemiological Board, is a nationally known expert in this field. He and others have developed new techniques for evaluating relationships between vehicle controls and driver error. Not only must we design controls for safety but such new developments must also be coordinated with driver education experts. For example, what is the best way to teach brake application in a car with automatic transmission, right or left foot? How does this relate to possible driver error? There are many more important questions to be answered.

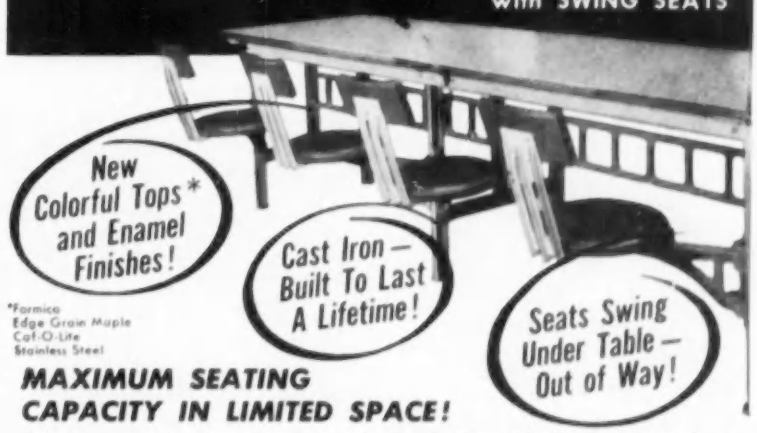
Vehicle Performance

The third component of design for safety is **Vehicle performance** —Speed, acceleration and horsepower have been rather touchy subjects in some circles. It is time to stop talking generalities and develop a program to evaluate this problem from all angles. I have discussed this subject with many people, including traffic safety specialists, and have found no two opinions alike. Opinions must be replaced with facts. A study should be made to evaluate the effect of speed and acceleration on accident rates, taking severity of the accident into account. Consideration must be given to the interrelationship of vehicle performance, highway design and driver ability. Let us develop methods of measurement in this area as sound as Cornell's in crash research.

Some data is probably already available in such studies as the Pennsylvania Turnpike Accident Report. Some new surveys will probably be needed also; nevertheless a study on the relationship of performance to safety could be made now. Once the facts are known, perhaps we, in the automotive industry will have to reevaluate some traditional positions.

From a panel discussion on Vehicle Safety at the National Safety Congress.

INDUSTRIAL AND INSTITUTIONAL
SECTIONAL TABLES
with SWING SEATS



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(For details, use Key # O-30 on card on page 71)

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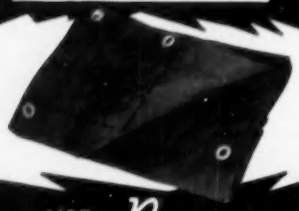

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- weighs 10 ounces per square yard before treatment
- impregnated with Hooper's Fire Chief treatment under their patent
- Underwriters Laboratory approved

The perfect protective curtain for all your dangerous work.

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YOU CAN'T FALL
It's a Life Saver

It locks automatically—instantly—holds

SAFETY DEVICE FOR LADDERS
Prevents death and injuries from falling.

Inexpensive. Easy to install. Clamps to any rung ladders, peg ladders, pole or frame. No welding or cutting.

Automatic: Positive. Will catch workman if he starts to fall even if unconscious.

Simple to operate. No upkeep. Requires no attention from climber.

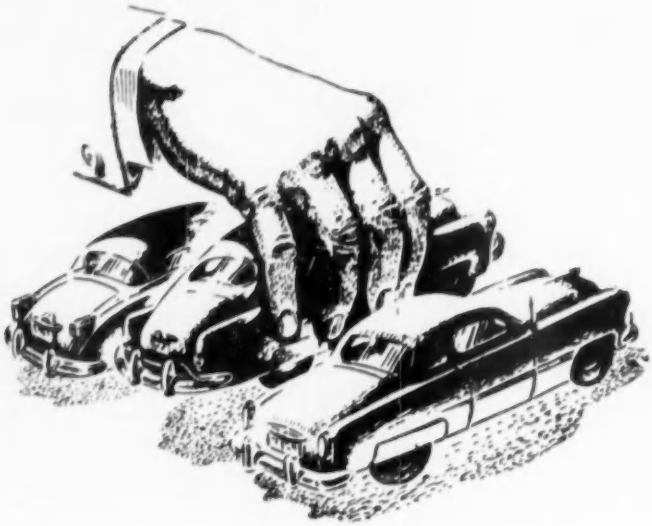
Notched rail hot dipped galvanized. Entire equipment rust and corrosion proof.

In use throughout country and abroad for approximately 6 years.

Patented. Manufactured only by

SAFETY TOWER LADDER CO.
1024 Burbank Blvd. P O Box 1052
BURBANK: CALIFORNIA

(Use Key # O-32 on Inquiry Card on page 71)



Organizing Against Highway Accidents

The following paragraphs are highlights from the address of Gov. Arthur B. Langlie, of Washington, at the annual banquet of the National Safety Congress in Chicago last October:

No one will argue that war is hell. But slaughter on our highways is worse than war. We have been killing each other and committing suicide in accidents on our highways at a rate far greater than the rate at which foreign enemies have killed American citizens in all the wars in which this Republic has been engaged since its very foundation. This does not even take into account the fractured skulls, crushed pelvises, lost eyes, disfigurements, torn bodies . . . the broken hearts and broken homes and children whose parents are silent statistics. The total result condemns every single one of us who knowingly and willfully breaks the laws of the road.

It's about time we stopped killing each other at the rate of more than 35,000 persons each year. It's about time we stopped pouring out $500,000 an hour, $12,000,000 every day for highway carelessness and lawlessness ending in death, injury and destruction. **The deadly figures reveal the startling fact that seven times as many working people in mills and offices, stores and shops, mines and quarries, are killed going to and from work than are killed at work.**

We Americans are terror stricken by the sudden and catastrophic onset of poliomyelitis and through the March of Dimes we have poured out our sympathetic hearts in an effort to find and remove the causes of this frightful blight. Yet, in 1951, 836 United States children fourteen years old and younger died of this dread disease of polio, while in the same year 11,441 children in the United States, fourteen and under, were killed in traffic tragedies. **The killing effects of motor vehicles is 13 times as terrible as poliomyelitis.**

From January, 1952, to October, 1953, (22 months), 68,894 Americans died on our Nation's highways. During the next 22 months from November, 1953, to August, 1955, 66,499 human beings were killed. This was a reduction of 3½ percent.

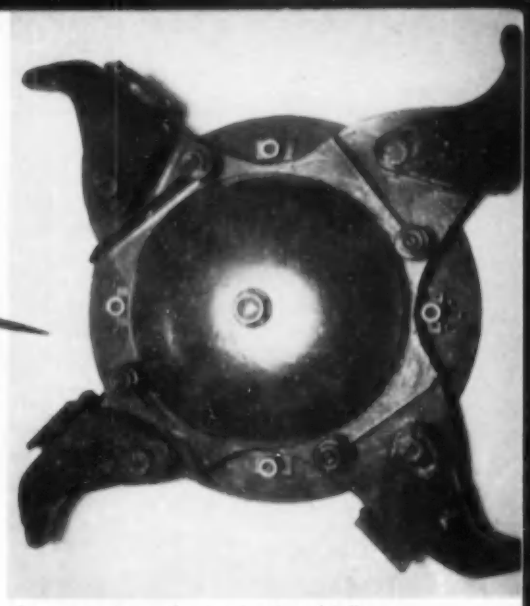
In the State of Washington during these same 22 months we reduced highway deaths not by 3½ percent but by 18.6 percent. Of what significance to the American people is the difference between these two figures? It is just this:

Had the rate of reduction which Washington experienced been projected on the nation for this 22-month period, we would have saved not one life, not 1,000 lives, but 12,814 human beings, who would be living today.

Had this 18.6 percent reduction happened nationwide, the country

(Continued on page 68)

HARD TO IGNORE . . . back-up alarm works in reverse



Above are shown the construction details of this new device. Its brazen, unfaltering voice should keep workers clear of wheels.

Heavy construction is distinguished by the din of its equipment—the spasmodic cough of the diesel engine combines with the roar of the 'dozer, and the hammer of a riveting gun joins the static of an automatic hammer. Throughout Alaska and the Pacific Northwest where defense construction is active, these heavy overtones are frequently startled by a signal as nerve shattering as a drum solo in the quiet sanctity of a church or a rebel yell in the hushed confines of a library—and it might be added, just as irritating.

This sound irritant is a back-up alarm, a mechanism installed on all mobile construction equipment and designed to warn those in the vicinity of backing dangers.

Back-up alarms have been required on defense construction projects in Alaska and the Northwestern States under the jurisdiction of the Corps of Engineers North Pacific Division since 1951. The safety device became a necessity on Corps' projects as a means of reducing accidents caused by heavy equipment backing through construction areas.

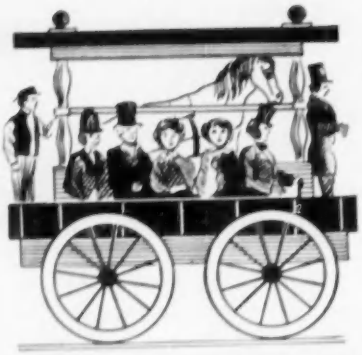
This is how back-up alarm looks when in position on truck hub, ready to do its job. No need to fear electric circuit trouble: it operates mechanically.

According to Corps safety officials of the Alaska District in Anchorage, use of the alarms has reduced the number of accidents but the alarms have had some shortcomings. The majority require electrical hook-up and are subject to costly maintenance. In addition there is a disadvantage in the variety of alarms in use.

The Corps have been interested in perfecting a simplified back-up alarm to become standard equipment on mobile construction machinery, and at present are interested in an alarm developed by two Anchorage mechanics.

The new alarm mechanism, a 6-inch metal bell mounted on a steel plate, is installed on the axle hub of wheeled vehicles. Adaptable for tracked equipment, the alarm is sounded by four heavy metal hammers striking the bell with the reverse motion of the vehicle. Bumper springs prevent the hammers from riding on the bell and hammerstops silence the alarm during forward motion. The alarm works automatically with wheel motion and requires no electrical or mechanical hook-up.

The new back-up alarm was named the B&R Automatic Bell by its inventors, Max von Radics and William Bookwalter, both employed in the heavy duty repair shop of the Miller Construction Co. in Anchorage. Von Radics, a foreman for heavy duty equipment maintenance, and Bookwalter, a



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If your plant's safety depends on an old-style dial-type watchclock, you're asking for trouble. Modernize at once with a DETEX tape-recording GUARDSMAN watchclock.

This is what the GUARDSMAN gives you that you are not now getting:

1. Continuous Watchman supervision on week days, weekends, holidays and extended plant closings.
2. Savings in overtime—a supervisor is not required to return to the plant on weekends to change the dial. (Permitting your Watchman to change the dial is against insurance regulations.)
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(Use Key # O-33 on Inquiry Card on page 71)

master mechanic, developed their alarm on their own time, drawing from on-the-job experiences in back-up alarm maintenance.

The mechanism was tested this year on Miller construction equipment and the results have been satisfactory for the inventors and promising for the Corps of Engineers safety officials who closely scrutinized the testing. Patents on the device are pending in the United States and Canada and negotiations are underway with Stateside firms for the manufacture and marketing of the alarm.

Meanwhile the alarm is undergoing further testing at the Corps of Engineers Research and Development Center at Fort Belvoir, Virginia, which functions as a laboratory for development and study of Engineer equipment.

Highway Accidents

(from page 66)

as a whole could have saved $1,219,330,000 in reduced automobile insurance premiums, in wages saved because the worker was not injured, savings in hospital and doctor bills.

How did we do it? It was every individual in the State of Washington who sat up and took notice when we said we meant business, that we were going to crack down in the toughest enforcement campaign in our history, that we were going to take the calculated risk out of driving, that we were out to catch the highway murderer in any legal way possible, that no holds were barred, and that no one was going to get by.

And attitudes changed. People experienced a rebirth of driver responsibility. We are more certain than ever now that the answer was and is in the mind and heart and attitude of the individual on Main Street and it isn't anywhere else.

Briefly here is a list of the steps we took in our traffic war. We got the facts. How many people were dying, where, when, how and why. Then we prepared the driver for what was going to happen through our 10-day warning period. We kept him fully informed through the press, radio, television, through local talks, through advertising, billboards, handouts, anything. Everyone cooperated . . . local clubs, safety organizations, enforcement personnel, schools. . . .

On the eleventh day we let fly. We used all known devices to catch the killer; radar, helicopters, spotter planes, emphasis patrols, unmarked cars, drunkometers. Warning tickets were largely abolished. Violation meant arrest, and people knew it. Meetings were held with police court judges, justices of the peace and other enforcement officers so that they came to realize the importance of backing up the police officers who often risked their lives in 90 mph chases to apprehend the lawless motorists. We tightened up our "point system" whereby the record of every driver shows the nature of his violation, with so many points for each. Fifteen points and his license is suspended.

Although we have made some progress in the past 22 months, we are persuaded that we have just begun to fight. Every day our people come up with new ideas on enforcement, engineering, education. We listen to everybody everywhere in our state who has an idea. A lot of people are doing a lot of personal thinking, and it's the people who make the difference.

Answers to "How Do You Look at an Accident" on page 63

Now that you have passed judgment on these accidents, let's review the answer to see how well you made out. Don't be disturbed if you didn't get a perfect score. Very few safety men have! Each case should have been scored as a "preventable" accident.

17. Caused by this driver. Had the driver intended to interrupt traffic and cause conflict, he could not have selected a better spot! He obstructed the right-of-way, causing friction in both traffic lanes. He should have pulled on around the corner, giving the correct signals, and made the stop in a position that would clear the intersection.

18. Caused by this driver. The other driver probably did look in his rear-view mirror, but he would not see a vehicle following him in the adjacent passing lane. Had the driver who made the statement yielded to a left turn signal, regardless of right-of-way, he would have prevented this accident, and would have helped clear traffic congestion.

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what's new for FEBRUARY

NON-SLIP RUBBER GLOVE

(Use Key # 737 on Inquiry Card on page 71)

A NEW, improved coated work glove of unusual construction has been developed by The Granet Corp. Called "Rubbergran", this glove is available for both men and women in the fully coated and palm coated styles. Also available in various lengths of gauntlets.

The glove employs a specially designed construction of natural rubber with an unusual roughened non-slip surface. The exclusive features of Rubbergran distinguish it from ordinary rubber-coated varieties and prevent accidental slipping or dropping in handling wet materials, while providing hand protection for the wearer from liquid hazards. It can also be used as a general-duty glove to prevent skin abrasion and scratches. The manufacturer offers to send a sample pair for work-test purposes to work glove users.

CLEANING SOLVENTS

(Use Key # 738 on Inquiry Card on page 71)

KELITE KE-SONIC, an emulsion cleaner for the removal of oily soil and greases, is manufactured under U. S. Patents and used for routine cleaning of aircraft, ship bunkers, trucks, automotive, railroad equipment, and heavy machinery. It is said to be exceptionally desirable for marine use because removed soil is held in stabilized emulsion even when mixed with sea water.

One form known as Ke-Sonic-C is employed by diluting with kerosene, diesel fuel or No. 2 fuel oil, and the soiled parts then sprayed, brushed, wiped or immersed in the solution. It is corrosion-safe on all structural metals, and is unique among emulsion cleaners in that it will clean metal to provide a no-water break rinse.

Ke-Sonic may be diluted with up to 20 parts of water and used in industrial pressure washing machines for the removal of oily soil from metal parts. Both cleaners are fire safe—exhibit a Cleveland open cup flash point of 180° F. and a Cleveland open cup fire point of 220° F.

DISPOSABLE LENS STATION

(Use Key # 739 on Inquiry Card on page 71)

ANNOUNCEMENT is made by Pulmosan Safety Equipment Corp. of a complete, disposable anti-fogging and cleansing station for goggles, spectacles and lenses. The "Stops Fog" is a self-contained, unbreakable unit housing an anti-fog and lens cleaner solution, wiping tissues, and used-tissue disposal space. Stops-Fog is a single solution that cleans and stops fog in one application. When the liquid and tissues are exhausted, the unit with its wall bracket is thrown away.

TRIPLE-DUTY STEPLADDER

(Use Key # 740 on Inquiry Card on page 71)

CALLED "Superlight Magnesium All-way Stepladder," a new, versatile stepladder is announced by Moss Products. The unit not only serves the purpose of three different ladders, but also provides safety and convenience.

Constructed entirely of magnesium, it is primarily a 6-foot stepladder with: side rails of 3" x 1" channel; reeded non-skid steps, reinforced by strong under-ribs substantially riveted to side rails; bucket rack; adjustable back rails hinged near to top rear of side rails; heavy front and back bracing; hard rubber feet which prevent slipping and eliminate floor marking. The flare is 1¼" per foot and the spread 39".

It is a triple duty ladder and can be used: First, as a stepladder that is lightweight; Secondly, as a "stairs" ladder, or for use on uneven surfaces (The adjustable back rail unit may be shortened and securely locked); Third, as a 9-foot extension ladder, by swinging the back rail unit completely up and over to form an extension of the front rails. In doing this, the spread supports are unlocked and the bucket rack folded.

FLAMMABLE LIQUID FAUCET

(Use Key # 741 on Inquiry Card on page 71)

A STAINLESS STEEL faucet with a protective, corrosion resistant anti-flash screen in the nozzle has been introduced by Economy Faucet Company. Designed for use with volatile and flammable solvents or other hazardous fluids, the faucet is manufactured of 304 stainless steel throughout, with chemically inert Kel-F seal rings.

The fume-tight, sanitary faucet permits full flow and has automatic, positive shut-off action which prevents after-drip. It can be disassembled quickly for maintenance and cleaning, and the shank is supplied in interchangable sizes of ⅜", ¾" and ½" with tapered threads to allow a tight fit in bung threads of dispensing drums.

Safety has been achieved by eliminating metal to metal contact in the operation of the valve. All frictional contact is limited to the Kel-F plastic seal rings moving against the inside walls of the body chamber. In addition, the plunger cannot seize. The faucet with anti-flash screen is also available in chrome-plated brass for non-corrosive service.

WASHROOM CLEANER-SANITIZER

(Use Key # 742 on Inquiry Card on page 71)

WITH EMPHASIS on the numerous safety features, Lincoln Research Inc. has recently announced its "Vitro Sheen Rest Room Sanitizer" to the maintenance trade. The product is a non-fuming, odorless, non-corrosive liquid which does not require the customary poison or acid labels. The product, it is said, eliminates the use of hazardous materials containing sulfuric, nitric, or muriatic acids, and the acidic type powered materials. Additionally, one of the recent germicidal developments has been incorporated into the product making it a disinfectant, germicide, and deodorant.

Vitro Sheen is simply applied at regular intervals to the toilet or urinal fixtures with a convenient cotton applicator. This operation is said to require less than 20 seconds per fixture—no further operation being necessary.

GUARD ALARM

(Use Key # 743 on Inquiry Card on page 71)

A NEW type of hand-held emergency "Guard Horn" which can be heard more than 1,000 feet has been announced by the Falcon Alarm Co., Inc.

The new self-powered units are designed for added protection of policemen, guards, firemen, watchmen, miners, payroll messengers and persons in other hazardous jobs who require self-contained signaling devices. The pound-and-a-half units are powered by Du Pont's harmless "Freon" and will deliver about 180 seconds of intermittent warning blasts before requiring refilling. Field tests show that the Guard Horn's sound reaches a volume of 110 decibels, 25 louder than required in approved fire alarm systems.

The units consist of four-inch-long steel cylinders topped by specially-engineered horn assemblies. Finger-operated toggle switches control the flow of Freon through diaphragm-type horns and may be locked into full open position for sustained operation. The units are equipped with special clips so they may be worn on workers' belts.

The Guard Horns are packed with two Freon-filled cylinders and one interchangeable horn assembly in each carton. The company suggests that cylinders be returned to the factory or sent to qualified refrigeration servicemen for inexpensive recharging as they become empty.

EAR PROTECTORS

(Use Key # 744 on Inquiry Card on page 71)

TWO MODELS of an ear protective device are being made by United Cable Corp. One model of the Selectone insulates

against all noise frequencies and is designed to counteract extremely loud noises where conversation is no longer possible. The second model is a low-pass filter and counteracts general noise while permitting the reception of ordinary communications by word of mouth, by telephone, or by sound signals.

The protector is inserted in the auditory canal and can be easily removed at any time. The outer shell of the device is made of a relatively soft material that is comfortable. It is nearly invisible, stays in place, and is easy to clean. It is suitable for all types of noisy industrial plants, such as boiler factories, textile mills, saw mills, metallurgical plants, etc.

(Use Key # 745 on Inquiry Card on page 71)

ROOF EMERGENCY KIT

A NEW emergency repair kit for use in stopping unexpected winter roof leaks is announced by The Monroe Company, Inc. Adaptable to both wet surface and low temperature applications, materials in the new kit permit remedying of roof defects immediately upon detection—without waiting for favorable weather. The kit is reputed to be suitable for use in driving rainstorms or snowfalls and at temperatures 15 to 20 degrees lower than those at which ordinary roofing materials can be applied.

The kit includes: 55 gallons of Winter Grade Wet Surface Rufferseal (heavy-bodied asbestos waterproofing), 50 lbs. of Wet Surface Ruffersealit (plastic patching compound), a roll of Rufferseal-saturated asphalt membrane and a tough-bristled roof brush.

Made with specially treated penetrating and sealing oils, Rufferseal is said to cut through damp surfaces and adhere firmly to the roof. Applied by brush or squeegee, it forms a smooth elastic coating that fills cracks and covers the entire roof with a seamless surface.

Around flashings, seams and gutters or on the roof surface itself, where sizeable breaks occur, Ruffersealit and membrane are used preparatory to a final topping with Rufferseal.

The new kit is compact and can be stored for long periods without deterioration. It is especially recommended for industrial plants, warehouses, public buildings, hotels, churches, schools.

(Continued on page 73)

FREE BULLETINS & CATALOGS

As a convenience to executives, these new publications of manufacturers are offered by the Reader Service Department of SAFETY MAINTENANCE & PRODUCTION. To obtain copies write in the key numbers on the free-postage card below.

LIGHTING EQUIPMENT

Grounded Hand Lamp 481
Daniel Woodhead Co. Bulletin shows a portable hand lamp with a new U blade side outlet for Nema type grounding caps. Also shown are U blade caps and connectors.

Automatic Emergency Lights 482
Electric Cord Co. This well-illustrated 1956 catalog shows a wide range of automatic lights with stand-by battery power for plugging into regular circuits and recharging by them. Includes single, double and multiple lamp units, automatic power systems, UL-approved heads for hazardous locations, and automatic illuminated Exit and other safety signs.

PERSONAL PROTECTION

Eye Saver Catalog 483
Watchemoket Optical Co. Fully illustrated 12-page catalog gives basic information on eye protection and describes a very wide range of goggles and face shields, particularly of the plastic types.

Disposable Paint Hoods 484
Wagco Products, Inc. Bulletin describes and illustrates a new disposable, air-supply type of spray paint hood made of transparent plastic or rubber-coated cloth. Bulletin explains headgear construction, air-supply noise reduction, and filtering assembly.

Acid-Resistant Work Clothes 485
Workion, Inc. New 16-page catalog and reference manual gives information on chemical-resistant work clothes made of synthetic fiber fabrics. Includes laboratory reports on resistance to specific chemicals. Features lint-free clothing, vital to certain operations, and a variety of men's and women's garments.

Air-Line Respirators 486
Mine Safety Appliances Co. Three new air-line respirators are described and illustrated in this new bulletin, including both constant flow and demand types. Gives data on facepieces and accessory equipment: blowers, compressors, hose reels filters, valves, pressure reducers, regulators.

Hard Hats 487
General Textile Mills, Inc. Illustrated bulletin outlines the features of a light-weight plastic hard hat which insulates against heat and sun and withstands 10,000 volts. Designed for construction and other general-duty wear, the hat has adjustable headband

Gas Mask Vision Patterns 488
Acme Protection Equipment Co. This special test bulletin presents the comparative maximum usable vision patterns of various types of gas masks. Source material is said to be from a device that checks all ranges of vision angles for both single and double-lens masks.

Compressed Air Purifiers 489
E. D. Bullard Co. Illustrated bulletin shows several models of air purifiers that can be used to cleanse air lines used to supply masks, hoods, helmets as well as air tools, paint sprays, etc. Includes a 6-outlet type for multiple operations.

Hot Job Glove 490
Olympic Glove Co. Bulletin gives details on three styles of gloves designed to protect hands from radiant heat. Utilizes an inner layer of aluminum foil to reflect heat on welding, burning and other hot jobs.

GUARDS

Two-Hand Clutch Controls 491
Micro Switch. An illustrated 12-page catalog covers a new, improved line of electric two-hand clutch controls for industrial machines. Featuring safety and greater productivity, the control equipment includes control boxes, hand switches, foot switch, limit switches, lock-out switches, electric solenoids, air cylinders, air valves, and air-lube units.

Pull-Out Press Guard 492
Safeguard Mfg. Co. The guarding of small presses is outlined in this illustrated bulletin that features a pull-out type of guard which removes the operator's hands from the die area during the dangerous part of the ram stroke.

Two-Hand Safety Starter 493
John Humm Safety Equipment Co. A power press guard that requires the use of both hands simultaneously to operate the press is described in this illustrated bulletin. Use of both hands for press operation safely removes operator's hands from die area.

Standardized Guard Parts 494
Harrington & King Perforating Co. Well illustrated 8-page catalog shows how to make your own guards with perforated metal standardized parts. Shows the units that make up the guard kit. Guards for a wide variety of machines and equipment are illustrated in photographs.

SAFETY TRAINING AIDS

Self-Sticking Markers 495
W. H. Brady Co. A variety of self-adhering signs and markers to promote safety and maintenance are described in this illustrated bulletin. Includes all-temperature, vinyl cloth wire markers; conduit and voltage markers; pipe identifiers; all-purpose numbers and letters; and adhesive aisle markers.

Safety Incentive Check List 496
Award Incentives, Inc. This check list, with accompanying descriptive material, outlines the various methods of setting up an award incentive program in your own company. Includes material for launching

(Continued next page)

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Free Bulletins (Cont'd)

and maintaining interest, suggestion awards, group awards, individual awards, and plant awards.

MISCELLANEOUS

Fire Extinguishing Systems 497
Walter Kidde & Co., Inc. This 16-page well illustrated brochure describes the rate-of-rise type of pressure operated carbon dioxide fire extinguishing systems. Gives construction details and shows how the various elements in system work.

Leak-Indicating Covers 498
Neirad Industries, Inc. Test swatches and descriptive bulletins show how these fabric covers for chemical line valves protect workers from spray leaks and help maintenance crews locate leaks immediately. Fabrics change color when they contact acids or caustics.

X-Ray Protective Materials 499
Ameray Corp. Illustrated 8-page bulletin describes a variety of materials suitable for shielding against x-rays. These leaded materials include: insulated lath, partition blocks, panels, floor and ceiling linings, light-proof shades, louvers, doors and frames, window frames, transfer cabinets. Specifications are included.

Flexible Hoses and Vents 500
Flexhaust Co. Flexible ducts for moving air, dust, fumes or materials by pressure, suction or gravity are shown in this 6-page bulletin. Particularly suitable for temporary or portable equipment, a variety of ducts are shown for general and specialized applications.

Silicone Reference Guide 501
Dow Corning Corp. The new 1956 reference guide to silicone products is a 12-page bulletin describing almost 150 items, 18 introduced during the past year. The products are conveniently grouped by physical form and cross-indexed by usage. Includes charts, tables, graphs and photos.

Non-Flammable Solvent 502
Chem Industrial Co. A safer, non-flammable industrial solvent is described in this catalog page. The solvent is said to have cleaning properties closely resembling carbon tetrachloride but is much less toxic.

What's YOUR Problem?

- **Has an accident or fire interrupted production?**
- **Want to know how to prevent it?**
- **Do you need background information on equipment for industrial safety, hygiene, or maintenance?**

As a service to its readers, "Safety Maintenance" will arrange to supply manufacturers literature on the following subjects. Just insert the key number on the Readers Inquiry Card on the preceding page and be sure to fill in your name and address. If you need information on a specific type of product, simply write it in on the Inquiry Card.

Key Number	Subject
	PERSONAL PROTECTION
101	Safety Goggles
102	Face Shields
103	Lens Cleaning & Anti-Fogging Equipment
104	Sweat Band
105	Hard Hats
106	Respirators & Masks
107	Protective Clothing
108	Women's Protection Clothing
109	Safety Belts
110	Safety Gloves
111	Foot Protection
112	Anti-Slip Soles
113	Oil-Proof Soles
114	Welding Helmets
115	Welding Curtains
	FIRST AID AND PERSONAL HYGIENE
120	Protective Skin Cream
121	Skin Cleansers
122	Sanitary Drinking Facilities
123	Athlete's Foot Control
124	Salt Tablets
125	Noise Analysis & Control
126	Antiseptic Medication
127	Burn Medication
128	First Aid Kits & Supplies
129	Stretchers & Litters
130	Resuscitators
131	Eye Wash Fountains
132	Hand Drying Equipment
	DUST & FUME CONTROL
135	Portable Ventilator
136	Dust & Fume Collectors
137	Carbon Monoxide Control

Key Number	Subject
	FIRE PROTECTION
140	Fire Extinguishers
141	Safety Cans
142	Fire Trucks
143	Safer Solvents
144	Degreasing Machines
145	Flammable Liquid Pumps
146	Fire Blankets
147	Fire Retardants
	LIGHTING EQUIPMENT
150	Alarms & Warning Lights
151	Explosion-Proof Lights
152	Electrical Insulation Tester
153	Fluorescent Lamp Guards
154	Emergency Lights
	MAINTENANCE
160	Anti-Slip Floor & Mats
161	Anti-Slip Waxes & Finishes
162	Floor Cleaning Compounds
163	Cleaning Machines
164	Oil & Grease Absorbents
165	Paints
	LADDERS & SCAFFOLDS
170	Ladders & Safety Devices
171	Scaffolds
172	Work Platforms
	GUARDS
175	Machine Guards
176	Power Press Feeders
177	Overload Guards
178	Saw Guards
	EDUCATIONAL AIDS
180	Safety Signs
181	Aisle Marking Equipment
182	Safety Awards & Emblems
183	Employee Safety Guide
184	Safety Tools
185	Work Tables

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WHAT'S YOUR PROBLEM?

What's New

(Continued from page 70)

ULTRASONIC FLAW DETECTOR

(Use Key # 746 on Inquiry Card on page 71)

AN ULTRASONIC transmission testing device for detecting laminar flaws in metals and plastics, "cupping" in bolts, brazing defects, and similar discontinuities, has been developed by Branson Instruments, Inc. The "Sonoray" is most useful for high-production testing of parts having uniform geometry.

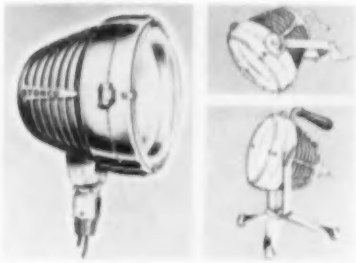
The part to be tested is immersed in a liquid, and continuous ultrasonic waves are passed through it from the transmitting transducer to the receiving transducer. Flaws in the part reduce the amount of energy picked up by the receiving transducer and this reduction, in turn, is registered in a meter reading.

Acceptance and rejection limits are established by first testing a statistically appropriate sample quantity of parts, and subjecting those indicating a low transmission factor to destructive tests, or sectioning, and visual inspection. A predetermined acceptable quality level may be set up by adjusting the sensitivity of a relay which is actuated by the output of the "SONORAY". Indicating lights, controlled by the relay are provided for rapid differentiation of good and bad parts.

LIGHT UTILITY STEP

(Use Key # 747 on Inquiry Card on page 71)

A LIGHTWEIGHT utility stool of one piece fiberglas that allows even women employees to handle their own scaffolding safely is now being manufactured by Burnham Products, Inc. Known as the CAB-O-LITE 2-step utility stool, it weighs less than 12 pounds and has convenient handles for carrying. These fiberglas stools stack conveniently inside one another, taking up very little floor space when in storage. It has safety treads that are non-skid under all conditions, and the base is designed for clearance and stability on irregular surfaces. Electrically non-conductive, the utility stool is also very strong, able to withstand heavy loads and stress. It is completely weather resistant and has a permanent finish. . . . no painting or other maintenance work is ever needed. The manufacturer is shipping samples of the stool in limited quantities for manufacturers' tests and consideration.



LONG-RANGE FLOODLIGHT

(Use Key # 748 on Inquiry Card on page 71)

A POWERFUL, new outdoor floodlight producing 115,000 candlepower with only a 500 watt rating has been announced by Stonco Electric Products Co., and is identified as their catalog No. 64. This new unit concentrates its entire light output in an oval-shaped, high-intensity beam that is especially effective in long range floodlighting of railway and freight yards, piers, docks, and similar installations where floodlights must be mounted at a considerable distance from the area to be illuminated.

Construction is heavy-duty, non-corrosive, precision cast aluminum with heavy internal and external cast ribs providing twice the normal heat dissipation surface area, and double the cooling rate from this one feature alone. Lamp life is stated at 2,000 hours. The lamp is cradled in a high-temperature rubber cushion-seal that protects it from shock and abuse, and is sealed rain-tight and water-tight by a heavy-duty cast aluminum hinged cover ring with heat-tempered clear, spred, or colored lenses.

It has a complete line of interchangeable wiring troughs, splice boxes, wall and pole fittings for mounting the exact cluster combinations an area requires. For critical beam positioning, the swivel is provided with a degree-marked aiming quadrant and arm-locking teeth that fix focus permanently regardless of pole sway, vibration, or shock.

For portable use by police and fire departments, municipalities, utilities, and construction companies, the unit is provided with a quick-disconnect socket and cord, carrying handle, cast aluminum non-slip tripod and provision for hanging in any position or permanent mounting. All wiring is fully enclosed and UL approved.

FIRE-VENT SKYLIGHTS

(Use Key # 749 on Inquiry Card on page 71)

THE MARCO CO. has announced the development of a new skylight product called the Fire-Vent Model. It contains all the features of the other Marcolite Aluminum and Fiber Glass Panel Skylights. The unit is fabricated of tough fiber-glass reinforced translucent structural panels set in an extruded aluminum frame. The Fire-Vent Model gives automatic and immediate ventilation in case of fire. When fire or excessive heat occur, a fusible link will separate causing the cover section to open and remain open until manually closed. The opening mechanism consists of an aluminum enclosed spring unit with stainless steel rod, eliminating the use of exposed springs.

Recent code changes in many parts of the country now require a percentage of roof area to be fire vented. The Fire-Vent Skylight will satisfy these requirements and still offer top lighting. It is equipped with self-contained curb and roof flange and is designed for installation directly to roof opening.

PORTABLE DUST COLLECTOR

(Use Key # 750 on Inquiry Card on page 71)

A PORTABLE dust collecting and shop cleaning unit, designed for the small industrial and school woodworking shop, is announced by Craftools, Inc. The "Dustman" is a powerful, self-contained dust collecting system that uses any standard garbage or ash can as its waste receptacle. When the can is full just remove the Dustman unit and empty.

It collects sawdust and dust right at the machine, thereby eliminating the floating dust problem in the shop. It is also used for cleaning the machines, wood working or metal, cleaning displays, and for general cleaning in the shop and work areas.

The unit draws in the sawdust or dirt through the standard hood and 2½" diameter hose. The suction is created by a powerful 8" pressure type blower. The sawdust or waste is drawn through the

blower and deposited in the can. The free air is permitted to escape through a filter bag located on the top of the machine. There are no internal filters that can clog or cut down the efficiency of the machine. The unit will operate on any 110-120 volt, A.C. single phase system. This can also be supplied for three phase if required. The Dustman comes completely wired ready to plug in. The flexible hose is 2½" in diameter and 6 feet long. The standard hood supplied is designed to fit most machines. Additional accessories, hoods, and dolly are available that increase the versatility of this machine.

EXHAUST SPARK ARRESTOR

(Use Key # 751 on Inquiry Card on page 71)

INCANDESCENT sparks from the exhaust of internal-combination engines are safely trapped by centrifugal force, according to an announcement by the manufacturer of the Gill Spark Arrestor. The unit is attached on the end of the exhaust pipe. Employing a new application of radiating force, the hot carbon particles are thereby carried to a cup-collector for periodic disposal of the carbon. Exhaust gases escape through a large central opening.

Made by Erickson Products Co., the device resembles a circular tube with a tangent entrance for the exhaust pipe. It has another tangent tube to which is attached the removable collector-cup for the hot carbon particles. Inside the circular tube is the central slot that permits the escape of exhaust gases.

This method of trapping dangerous sparks does not use screens which may clog, nor multi-fins that need cleaning and maintenance. It is a simple centrifugal spark-collecting principle which offers protection in hazardous areas. By collecting sparks in this way, there is negligible back-pressure on the engine, no moving parts, and no maintenance, the manufacturer claims. It is made of No. 302 stainless steel and has been thoroughly tested for three years and proved effective where fire hazards from sparks are greatest.

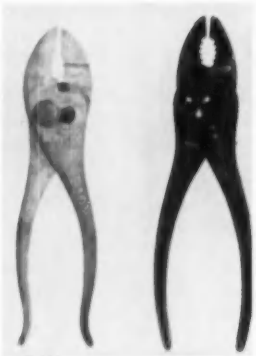
NON-STREAK LENS CLEANER

(Use Key # 752 on Inquiry Card on page 71)

FEDERAL Research Industries have developed a clear odorless lens cleaning compound that utilizes a new silicone homogenization. Called "Lens-Wick," it consists of a wick-type dauber in a white and green screw top container looking very much like a pocket inhalant tube.

By making a simple X mark with Lens-Wick on the surface of a lens and rubbing gently in a polishing motion, a slippery effect will be noted. The compound reduces friction to a minimum and a micro-film sheen of Lens-Wick is dispersed over the surface of the glass. The manufacturer claims the compound banishes streaking and also reduces fogging almost completely, as well as soiling and scratching.

It will prevent a water film from forming on the surface, and it will also reduce the adhesion of road dirt on windshields and headlights. It is stable at high and low temperatures, making it suitable for welder's goggles and lenses.



SPARK-PROOF PLIERS

(Use Key # 753 on Inquiry Card on page 71)

SIX and eight inch combination slip-joint pliers, (P-102 and P-103), forged to steel tool specifications and appreciably stronger than previous cast models, have been added to the "Berylco" line of spark-resistant safety tools by The Beryllium Corporation.

Compared to the former cast products, the new forged pliers are slimmer. Section thicknesses are on a par with alloy steel tools and are nearly equivalent to alloy steel pliers in strength. Beryllium copper safety tools are used in hazardous locations where accidental sparks from a steel tool might result in fire or explosion. "Berylco" Safety Tools are also completely non-magnetic, corrosion resistant to most acids and chemicals, and a necessary must in salt and fresh water marine applications. Will not chip or mash as is the case with other non-ferrous metals, thus creating greater useability, longer service life and greatly reduced replacement expense.

FLAME-RESISTANT CURTAINS

(Use Key # 754 on Inquiry Card on page 71)

FLAME-RESISTANT curtains and blankets, made from impregnated canvas and designed to provide protection from intense heat, arc flash, molten splash, flying chips and scale, are being offered by Eastern Equipment Co., Inc. These curtains and blankets are used to screen off arc welding operations and can also be made into inexpensive booths to screen off any other dangerous operation, wherever required. Because of the many applications, different sizes required, etc., each order is individually processed from 8, 10, or 12 ounce duck and from Underwriters grade asbestos cloth in sizes up to and over 100 sq. ft. Seams are double row stitched; all edges are carefully hemmed, and brass grommets are sturdy and firmly fastened. Blankets are made with grommets in each of the four corners, unless the blankets are unusually long or specifications call for special treatment. Curtains generally include grommets placed one foot apart on one long side. Dimensions, weight of canvas and number and placement of grommets are determined in accordance with customer's specifications.

IN-PLANT TRUCK FEATURES FOUR-FOLD FIRE FIGHTING

(Use Key # 755 on Inquiry Card on page 71)

A NEW MODEL "In-Plant" fire truck that features four major fire fighting guns is announced by Seco Engineering and Manufacturing. Designated as the S-556 Model, the new truck carries Carbon Dioxide, Dry Chemical, Water and Foam.

This functionally designed and advanced styled model makes available large volumes of extinguishing agents at any part of an Industrial Plant in seconds as the truck has a speed of 15 miles per hour. It has a turning radius of 96", is 50" wide and 68" high. A 15 cubic-foot accessory cabinet is included as well as a

ladder cabinet for an extension ladder. 100-foot hoses for Water Fog and Carbon Dioxide are standard equipment.

Seco has developed "In-Plant Fire Trucks" for use inside industrial plants to fill the huge gap between small portable fire fighting apparatus and large municipal type fire trucks, and to provide fire protection for industries moving out of urban areas and away from the advantages of fully-equipped municipal fire protection units. An effective in-plant fire department, the Seco mobile fire fighter will smother dangerous blazes in a matter of seconds, thus reducing the chances of a small fire reaching uncontrollable stages. Furthermore, the trucks can be equipped to protect any type of plant, including chemical, metal working, textile, plastic, woodworking, and many others.

HARD HATS & CAPS WITH ADJUSTABLE HEADBAND

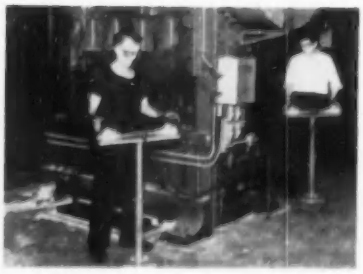
(Use Key # 756 on Inquiry Card on page 71)

A SAFETY Hat and Cap with a full-floating headband completely adjustable to head sizes from 6½ to 8 is announced by The Boyer-Campbell Company. Identified as "Supergard," it is molded from a flame-retardant, waterproof material in seven different brilliant, permanent colors — red, yellow, blue, white, grey, green, and brown. It meets all Government specs GGG-H-142B as now in effect. There is no lacing involved in the various head adjustments, each size setting is positive and secure. Adjustment difficulties, common with ordinary hats and caps of this type, are eliminated. Made from a flame-retardant material, Supergard is also fitted with a new type of plastic cradle, an important hygienic feature. No metal of any kind is in the hat or cap. Only the wrinkle-free sweatband, leather and leatherette, need be replaced when transferring hat or cap from one employee to another.

NEW TWO-HAND CLUTCH CONTROL

(Use Key # 757 on Inquiry Card on page 71)

AN IMPROVED electric two-hand clutch control for industrial machines that increases both production and operator safety has been developed by MICRO SWITCH. Use of the trip control system can increase productivity of manually-operated power machines by as much as 20 per cent, the company said, because of the simple, direct operating motions of the operator, the feather-touch and finger-tip operation of the control switches, and other features which reduce operator fatigue and speed up the machine's operations.



The new system incorporates many safety features. The "fail-safe" feature makes accidental operation of the clutch impossible. The clutch can operate only when the control system is functioning properly. Two sets of contacts close on the actuator load on each operation, and both must be released before the next operation can be performed. A third set of contacts "breaks" the load, eliminating any danger of sticking contacts. If a component fails or is broken in any position, the control system becomes inoperable.

Operators can't cheat on the control by tying down one control switch and attempting to operate the system with one hand. The system's exclusive "can't-cheat" feature requires operation of all the switches in the control circuit within a predetermined and adjustable time interval. Both hands must be on the controls and thus cannot be extended into the danger area.

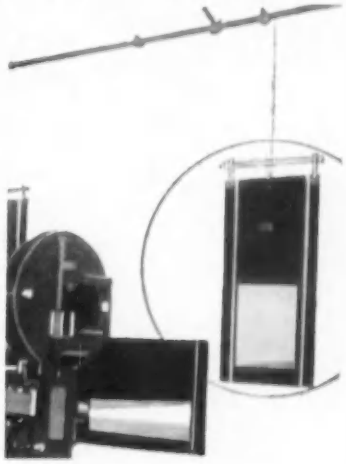
The system's "set-up-and-run" feature protects operators, set-up men and expensive dies from an unexpected power stroke during set-up. The machine's motor must be turned off before the clutch can be actuated. The control also prevents the clutch from being engaged on a dead fly-wheel and an unexpected stroke occurring when the motor is started.

STAINLESS STEEL EXTINGUISHER

(Use Key # 758 on Inquiry Card on page 71)

THE FIRST lightweight, stainless steel, Pressurized Water fire extinguisher has been developed by Fyr-Fyter, and is now in production. This new extinguisher is approximately 4 lbs. lighter in weight than any 2½ gallon brass extinguisher and fills the need for a light, easily portable unit that can be quickly put into action by women as well as men. It is particularly suitable for installation in fire hose and extinguisher cabinets and is recommended for schools, hospitals, institutions, and industrial plants.

A slight pressure of the thumb releases a strong 35 to 45 ft. stream of water. Unlike non-pressurized models, the liquid supply can be shut off and conserved to meet the demands at the scene of a fire. The extinguisher can be easily pressurized with free air from a gasoline service station, or it can also be pressurized with the portable Fyr-Fyter Dry Nitrogen Recharging Units. The air-inlet valve is similar in construction to the valve on an automobile tire. Inspection and maintenance is simplified because a visual pressure gage tells at a glance if the extinguisher is in proper operating condition. The extinguisher is hydrostatically pressure tested to 500 lbs. p.s.i. Special overfill tube prevents extinguisher from being overfilled. The new model is approved by Underwriters' Laboratories.



FIRE-SHUTTER COUNTER BALANCER

(Use Key # 759 on Inquiry Card on page 71)

A NEW torison counter balancer has been designed and placed into production by The Best Devices Co., Inc., to permit quiet, non-jarring closing of projection room fire-door shutters.

The new balancer is available to fit all existing makes. It consists of a shaft that rotates on bearings formed by two end mounting brackets, a torison spring, and an arbor that winds or unwinds a cable that fastens to the shutter door.

By mounting the shaft parallel on the top of any fire shutter frame, the cable readily winds or unwinds on the arbor as the door is raised or lowered. As the door lowers, the cable unwinds turning the arbor as well as the shaft against the resistance of a torison spring. Thus, the door closes quietly without jar or shock.

The gentle, positive action prevents pinched or maimed fingers as the door closes. Unsightly weights and cables are no longer necessary. This prevents injury and floor damage from the accidental falling of these weights. Projection room cleaning and the moving of equipment is made easier, too.

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CESCO RIGHT...before your Eyes!

Snap-fast Face Shield
with deflector crown

Open top
Snap-fast Face Shield

Helmet-type Face Shield

Full-visibility
Helmet-type Face Shield

Spark Shield

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CESCO
All-Purpose Face Shield
for general shop work

Here is a practical answer to the demand for a low-priced, light, effective face shield that will meet the demands of a wide variety of shop requirements.

The CESCO **770 Face Shield** comes in three window lengths of 4", 6" and 8" (top to bottom). The windows mount inside an aluminum channel in a tight assembly and are impervious to the entrance of dirt or liquid.

The head band of vinyl plastic is adjusted by a sliding strap. There is no metal or mechanical adjustment to snag the hair. The shield conforms easily to the head at all points. Windows of cellulose-acetate may be in green or clear.

Contact your nearest CESCO distributor today or write for complete information and prices.

Write for complete Catalog

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CESCO CESCO **FOR SAFETY**

(For details, use Key # O-34 on card on page 71)

Thantis® LOZENGES

first aid for throat irritations

SORE THROATS due to coughs and colds, if neglected, may result in lost man hours of work.

THANTIS® Lozenges contain no antibiotic; they produce no unpleasant by-reactions in the mouth.

THANTIS Lozenges relieve pain promptly—reduce infection—act prophylactically.

Twenty-six years' extensive clinical and lay use has proved the safety and effectiveness of this popular product.

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First aid for wounds . . .

Neglect may cause infection which can be prevented by prompt use of 'Mercurochrome.'®

No antiseptic has been proved to be more effective than 'Mercurochrome' for topical application.

(For details, use Key # O-35 on card on page 71)

HYNSON, WESTCOTT & DUNNING, INC., BALTIMORE 1, MARYLAND